

MISSOURI HEALTH ASSESSMENT



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Donald G. Kauerauf
Director



Michael L. Parson
Governor

November 22, 2021

Dear Missourians:

I am pleased to share Missouri's 2021 State Health Assessment (SHA). This assessment reflects the current status of health in the state and was built on the Mobilizing for Action through Planning and Partnership (MAPP) model. The four components are: the State Health Status Assessment, Community Themes and Strengths, State Health System Assessment, and Forces of Change. These four sub-reports provide the full picture of data analysis, community view of population health, gaps and strengths of the public health system, and factors that may affect the health system.

I want to thank our many partners, community stakeholders, and Department of Health and Senior Services (DHSS) team members who devoted significant time to provide input on topics such as beliefs and perceptions of the health of Missourians, as well as the strengths and weaknesses of the statewide public health system. The development of the SHA was a collaborative effort between the DHSS and the State Health Partner Group, which encompasses stakeholders from throughout the Missouri public health system.

This SHA will guide our work on the 2021-2026 State Health Improvement Plan (SHIP). The emergence of COVID-19 and our response fighting the disease have placed an even greater importance on the need for a robust public health system. Our SHIP is designed to be a living document and will encompass areas of focus to achieve better health in Missouri. Improvement in the priority areas identified will be possible by developing strategies and approaches to address the key health issues and disparities.

Addressing these health issues will require collaborative effort across our communities with health care partners and stakeholders. Development of the SHA and the SHIP are a first step in this work. I look forward to working with you for these critical efforts.

Sincerely,

A handwritten signature in black ink that reads "Donald G. Kauerauf". The signature is written in a cursive style.

Donald G. Kauerauf, Director
Missouri Department of Health and Senior Services

EXECUTIVE SUMMARY

Background

The Missouri Department of Health and Senior Services (DHSS) is devoted to its aspiration, “We will protect health and keep the people of Missouri safe.” This document was assembled as part of the department’s seeking of reaccreditation through the Public Health Accreditation Board (PHAB). One aspect that PHAB requires of its applicants is the completion of a community health assessment. This document describes Missouri’s State Health Assessment process, which used state-level modification of the National Association of City and County Health Officials’ (NACCHO), Mobilizing for Action through Planning and Partnership (MAPP).

As part of the process, and to ensure that a diverse set of stakeholder voices were heard, a group was assembled of local public health agencies, academic institutions, nonprofits and other state agencies. This State Health Partner Group offered their time and expertise through a number of assessments, surveys, conversations and digital meetings.

Summary of Outcomes

Some areas of Missouri’s health system have seen increases since the last State Health Assessment. However despite the work of the system as a whole, some Missouri residents still do not have the same opportunities for health. Disparities and inequity continue to be a concern throughout many health indicators along a variety of dividing lines. The Southeast region continues to have the poorest health outcomes, as it did in the 2016 State Health Assessment. It has the highest mortality rate and lowest life expectancy.

Key Issues

Seventeen issues were identified as being of particular concern. These issues are the result of the four assessments included as subsections of this document. Each one is a critical factor in Missouri’s overall health. In this document’s companion, the State Health Improvement Plan (SHIP), the Key Health Issues have been grouped into Strategic Priority Issues, focusing on how to address these concerns, rather than on their identification.



INTRODUCTION

Introduction

2020 was a year of unprecedented challenges. The COVID-19 pandemic swept the globe. Most of the world experienced changes; education became virtual, those that could began to work from home and those that could not saw their job places change. For the public health and healthcare sectors, significant effort was focused on trying to not only fight the pandemic, but also continue to provide all other required services.

This was the setting in which the Missouri Department of Health and Senior Services (DHSS) worked towards reaccreditation. Strategic planning and honest assessment can be difficult when faced with such an all-encompassing test. However, the focus of this document and its companion State Health Improvement Plan (SHIP) shine a light on the time post COVID-19. The work of public health never stops and the goal of this process is to be prepared for the next challenge the public health system faces.

Public Health Accreditation Board (PHAB)

The PHAB is a non-profit entity which provides oversight for a voluntary accreditation process for public health agencies. PHAB works to promote the quality and performance of all public health departments and has a stated vision of:

“...a high-performing governmental public health system that will make the United States a healthier nation”.

DHSS attained accreditation in 2016 and has provided reports each year to the PHAB. The reaccreditation process occurs every five years and requires the department to show how it has continued to utilize the capacity indicated in the initial accreditation as well as focusing on continuous quality improvement. While there are many components to reaccreditation, two that are vital to ensuring DHSS receives accreditation are the (State Health Assessment) SHA and SHIP. The first document describes the current view of Missouri’s health system, its capacity and the overall health of Missourians. Additionally, it names the Key Health Issues affecting the State.

The companion document, the SHIP, groups the

identified Key Health Issues into Strategic Priority Issues. The aim of the SHIP is to provide steps to address the key issues over the next five years.

State Health Partner Group (SHPG)

To make these documents truly meaningful, external stakeholders from the entire Missouri health system have gathered over the last two and a half years to provide input. Through surveys, in person meetings, questionnaires and conference calls, the stakeholders ensured that Missourians were represented from all corners of the state. This group has been labeled the Missouri SHPG, and its membership continues to grow. On the following page is a list of organizations that have, to date, participated in-person or through the provision of data.



HealthierMO

Adair County Health Department
Atchison County Health Center
Audrain County Health Department
Barton County Health Department
Bollinger County Health Center
Butler County Health Center
Caldwell County Health Department
Camden County Health Department
Cape Girardeau County Public Health Center
Carter County Health Center
Cedar County Health Department
Joplin Health Department
St Louis City Dept of Health
St Joseph Health Department
Clark County Health Department
Clay County Public Health Center
Clinton County Health Department
Cole County Health Department
Columbia/Boone County Public Health & Human Services
Public Health, Boonville, MO
Dunklin County Health Center
Franklin County Health Department
Grundy County Health Department
Health Literacy Media
SLU College for Public Health and Social Justice
Henry County Health Center
Jackson County Health Department
Jasper County Health Department
Jefferson County Health Department
City of Kansas City Health Department
Lafayette County Health Department
Lawrence County Health Department
Lincoln County Health Department
Livingston County Health Center
Macon County Health Department
Madison County Health Department

Marion County Health Department
Mercer County Health Department
Miller County Health Center
Mission Missouri
Missouri Alliance-Home Care
Missouri Assisted Living Association
Missouri Association of Area Agencies on Aging
Missouri Association of Nursing Home Administrators
Missouri Center for Public Health Excellence
Missouri Coalition Against Domestic and Sexual Violence
Missouri Coalition for Oral Health
Missouri Council for Activity and Nutrition
Missouri Council for In-Home Services
Missouri Dental Association
Missouri Department of Corrections
Missouri Department of Elementary & Secondary Education
Missouri Department of Health and Senior Services
Missouri Department of Higher Education & Workforce Development
Missouri Department of Mental Health
MO HealthNet Division | Missouri Department of Social Services
Missouri Developmental Disabilities Council | Jefferson City MO
Missouri Family Health Council
Missouri Foundation for Health
Missouri Health Care Association
Missouri Hospital Association
Missouri Institute for Community Health
Missouri League for Nursing
Missouri Primary Care Association
Missouri Public Health Association
Ozarks Public Health Institute - Missouri State University
MoALPHA
Morgan County Health Center

New Madrid County Health Department
Newton County Health Department
Nodaway County Health Center
Ozark County Health Department
Perry County Health Department
Pettis County Health Center
Putnam County Health Department
Ralls County Health Department
Randolph County Health Department
Reynolds County Health Center - Prevent. Promote. Protect.
Ripley County Health Center
St. Charles County Department of Public Health
SLU College for Public Health and Social Justice
Saline County Health Department
Shelby County Health Department
Center for Environmental Analysis - Southeast Missouri State University
Springfield-Greene County Health Department
St. Francois County Health Center
St. Charles County Department of Public Health
State Technical Assistance Team | Missouri Department of Social Services
Ste Genevieve County Health Department
Stone County Health Department
Sullivan County Health Department
Taney County Health Department
UMKC Institute for Human Development
University of Missouri-Kansas City School of Medicine
Vernon County Health Department
Warren County Health Department
Brown School at Washington University in St. Louis
Webster County Health Unit
Wright County Health Department

SUMMARY OF MISSOURI STATE HEALTH IMPROVEMENT PLAN (2013-2018)

To become nationally accredited through the Public Health Accreditation Board (PHAB), the Missouri Department of Health and Senior Services (DHSS) conducted during 2013 a collaborative effort to develop the State Health Assessment (SHA) and the State Health Improvement Plan (SHIP). The SHA identifies contributing factors that impact population health outcomes, assets and resources that can be mobilized to improve population health and informs identification of priority setting and planning in the SHIP. The department utilized the Mobilizing for Action through Planning and Partnership (MAPP) process to develop the SHA. The results of the four MAPP assessments offer important contextual information and a foundation for creation of the SHIP:

- The State Health Status Assessment data on health determinants and health outcomes reveal the health status of citizens and often show disparities based on region, race, age and gender and identifies priority community health and quality of life issues.
- The State Themes and Strengths Assessments is a qualitative assessment that considers input of a broad range of citizens and stakeholders to achieve a strong understanding of community issues and concerns, perceptions about quality of life and a listing of assets that can be used to improve citizen health in the state.
- The State Public Health System Assessment reveals both the strengths and weaknesses of the public health infrastructure and measures the state's capacity to deliver the 10 Essential Public Health Services (EPHS).
- The Forces of Change Assessment focuses on the identification of significant factors, events and trends whose current or future occurrence might affect the health and quality of life of citizens or the effectiveness of the state's public health system. The associated challenges and opportunities of these forces are relevant to the creation of public health strategic priorities.

After reviewing the four MAPP assessment findings, DHSS and the State Health Partner Group (SHPG) identified ten key issues: Uninsured, Smoking, Economics, Mental Health and Substance Abuse, Health Services Access and Costs, Modifiable Risk Factors, Commitment and Collaboration through Partnerships, Assure Workforce, Performance Management and Quality improvement. Additionally, the team identified public health priorities, strategic issues and performance measures to monitor progress in the *Missouri*

State Health Improvement Plan (SHIP) – 2013-2018. DHSS and its key partners in the public health system reviewed available data and monitored the progress and, based on achievements, lessons learned, and emerging health issues, the partner group developed annual action plans to address health priorities. The action planning process developed an opportunity to not only promote collaboration, coordination and efficiency but also to contribute information, knowledge and expertise within selected priority health issues: Access to Health Care, Modifiable Risk Factors and Infrastructure.

Access to health care

- In 2015, approximately 12.0% of Missourians age 18-64 had no health care coverage, a decline from 17.5% in 2011. Additionally, after the first two Marketplace open enrollment periods the number of uninsured Missourians under age 65 decreased to 11.7% in 2014 compared to 13.3% in 2013.
- The number of citizens who needed to see a doctor in the past 12 months but could not because of cost was 13.8% in 2015, down from 15.7% in 2011. The target for this area was 12.7% by 2018.
- The number of people with a personal doctor or health care provider declined from 74.6% in 2011 to 67.0% in 2015, a significant regress away from 2018 goal of 80.0%. The number of primary care physicians in 2016 (4,801) was on target at 4,900 in 2018, while the number of psychiatrists and advanced practice registered nurses (APRNs) exceeded the 2018 target of 767 and 6,300, respectively. However, a downward trend was reported for number of dentists at 2,245 in 2016 as opposed to 2,469 for the 2018 target.
- For Missourians to have access to comprehensive, quality, affordable health care, partners developed an objective to decrease the number of indicators for healthcare quality that are below the national benchmark by 2018. The 2013 data revealed an improvement in hospital admissions for uncontrolled diabetes without complications from a rate of 23.7 per 100,000 in 2009 to 20.5 in 2013 and avoidable admissions for hypertension from 68.4 per 100,000 in 2009 to 64.5 in 2013. Hospital admissions for short-term complications of diabetes per 100,000 population of adults worsened from a rate of 70.0 in 2009 to 94.4 in 2013.

Modifiable Risk Factors

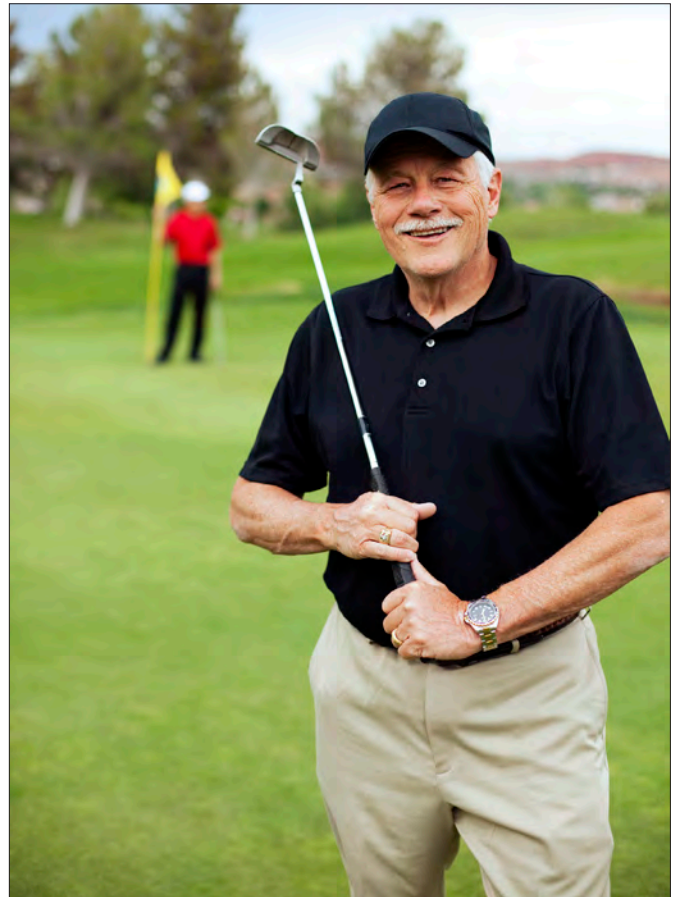
Four objectives were developed to help achieve the goal for Missourians to attain optimal health through reduction of modifiable risk factors.

- The first objective was to decrease the prevalence of obesity among adults and children. Whereas obesity among high school students declined from 15.4% in 2011 to 13.1% in 2015, exceeding the 2018 target of 13.8%, there was no significant change in the prevalence of obesity among adults; it was 30.3% in 2014 and 32.4% in 2015, regressing from the 2018 target of 27.3%.
- The second objective was to decrease current cigarette smoking among adults and high school students. The 2015 data showed that Missouri adults who smoked cigarettes every day or some days had significantly declined from 25.0% in 2011 to 22.3% in 2015. Smoking among high school students also decreased significantly from 18.1% in 2011 to 11.0% in 2015, exceeding the goal of 14.0%.
- The third objective was to increase the percent of Missourians who are protected from secondhand smoke. The 2016 data showed that the percent of Missouri population that lives in communities with smoking bans covering all indoor public places and indoor work places improved from 23.0% in 2013 to 31.0% in 2016.
- The fourth objective was to reduce the prevalence of substance abuse through implementing effective and evidenced-based programs.
 - o This objective was realized through a decline in alcohol use in ages 12 to 20 from 24.7% in 2008-2010 to 21.8% in 2013-2014, which exceeded the 2018 target of 23.0%.
 - o There was also a decline in marijuana use among high school students from 20.6% in 2009 to 16.3% in 2015, which exceeded the 2018 target of 19.6%.
 - o However, between 2008-2010 and 2013-2014, the use of marijuana increased from 6.1% to 8.0%; illicit drug use at 2.9% did not reflect a change within this period; and alcohol dependence or abuse from 7.0% to 6.4%, regressing from 2018 targets of 5.5%, 2.7%, and 5.0%, respectively.
 - o Although the goal was to increase the number of drinkers who quit during their pregnancy to 58.0% by 2018, this number worsened, decreasing from 52.7% in 2010 to 49.1% in 2013.

Infrastructure Issues

To achieve the goal of having an essential infrastructure for an effective public health system, partners developed an objective to increase the number of Local Public Health Agencies (LPHAs) with a Workforce Development Plan from 26 to 30 by 2018. In 2016, 40 LPHAs reported having a workforce development plan.

Similarly, the stakeholders developed an objective to increase the number of accredited LPHAs. In 2014 there was one LPHA accredited by the Public Health Accreditation Board (PHAB) and 12 accredited by the Missouri Institute for Community Health (MICH). In 2016, these numbers both increased to five and 15, respectively.



DEMOGRAPHICS

Measuring demographics of a population is an essential part of assessing health status, as the meaning of health often changes for different sections of the population according to one's age, sex, race/ethnicity and income, among other factors.

Missouri Population Size and Growth

Understanding population characteristics can help describe communities and changing demographics and may even forecast future social and economic events. Missouri covers 68,727.3 square miles. The 2018 population density of the state was 89.1ⁱⁱ people per square mile (34.4 per square kilometer) with a 2018 estimated population of 6,126,452 - an increase of 1.4% since 2013. The state's population is expected to exceed 6.7 million by 2030. The state's capitol is Jefferson City and the most populated cities are: Kansas City - 491,918; St. Louis - 302,838; Springfield - 168,122; Independence - 116,925; and Columbia - 123,180. Of Missouri's total population, 1.87 million (30.5%) are over 55 in age; 1.04 million (16.9%) are over 65; 438,451 (7.0%) are over 75; and 124,805 (2%) are 85 and over.^{iii,iv}

Age

One of the most common ways of illustrating population structure is a population pyramid. The shape of a population pyramid can help us understand growth patterns and possible dependency issues or gender imbalances. The Missouri population pyramids show the two largest generations: baby boomers, born between about 1946 and 1964, aged between 54 and 72 in 2018; and millennials, born between 1981 and 1996, aged between 22 and 37 in 2018. By 2030, the ratio of age 65 and older to working-age, old-age dependency ratio is projected to rise. The proportion of Missouri's population aged over 60 is growing while the proportion aged under 60 is shrinking (Table 1). The U.S. Census estimates that more than 1.8 million (approximately 26.2% of Missouri's population) will be over the age of 60 by the year 2030, an increase of 22.1% from 2018 (Figure 1).

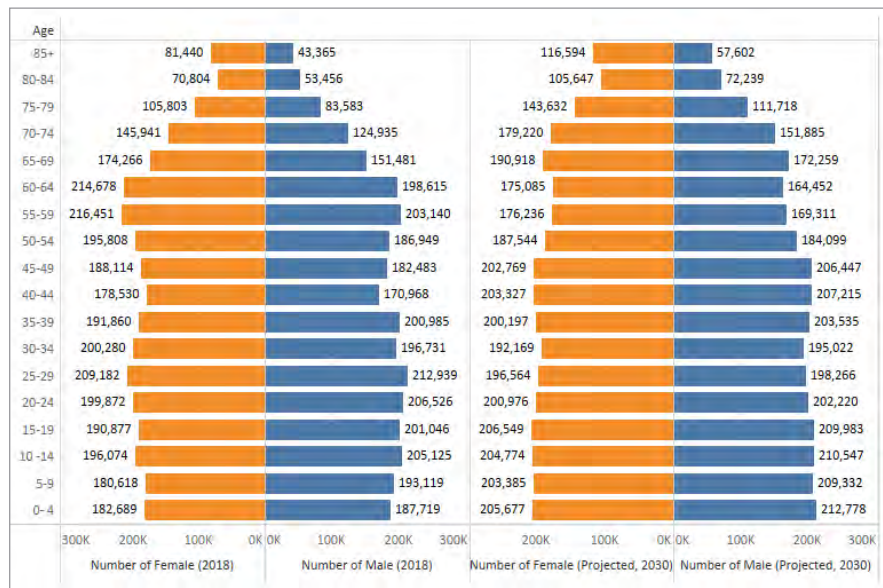
Table 1 – Projected Missouri population by age group

Source: U.S. Census Bureau 2009, Missouri Office of Administration

| | 2010 | 2020 | 2030 |
|-------|--------|--------|--------|
| 0-19 | 26.70% | 25.80% | 25.20% |
| 20-39 | 26.00% | 26.80% | 25.00% |
| 40-59 | 27.70% | 24.10% | 23.60% |
| 60+ | 19.60% | 23.30% | 26.20% |

Figure 1 - Distribution of Missouri population by age and sex 2018, estimated and 2030, projected

Source: U.S. American Community Survey and CDC Wonder – 2018 (1-Year Estimation)



Race and Ethnicity

According to 2018 U.S. Census Bureau data, the largest race and ethnic groups in Missouri were white non-Hispanic (82.2%) and Black or African American non-Hispanic (11.5%), followed by Hispanic or Latino (any race (4.1%)) and Asian non-Hispanic (2.0%). American Indian and Alaska Native non-Hispanic were 0.5%, while Native Hawaiian non-Hispanic were 0.1% (Figure 2). The Hispanic or Latino population was 4.1% (2.9% Mexican, 0.3% Puerto Rican, 0.1% Cuban, and 0.8% Non-Hispanic) (Figure 3).



Figure 2 - Distribution of Missouri population by race - 2018
Source: U.S. American Community Survey – 2018 (1-Year Estimation)

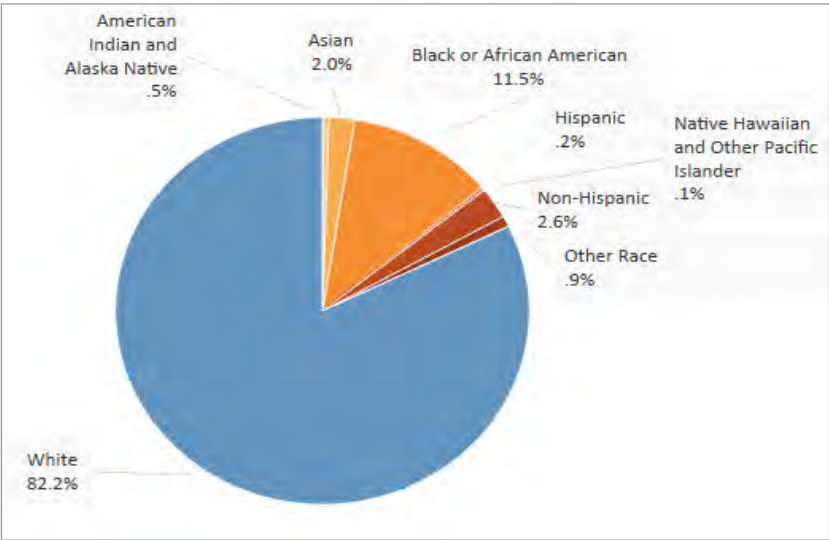
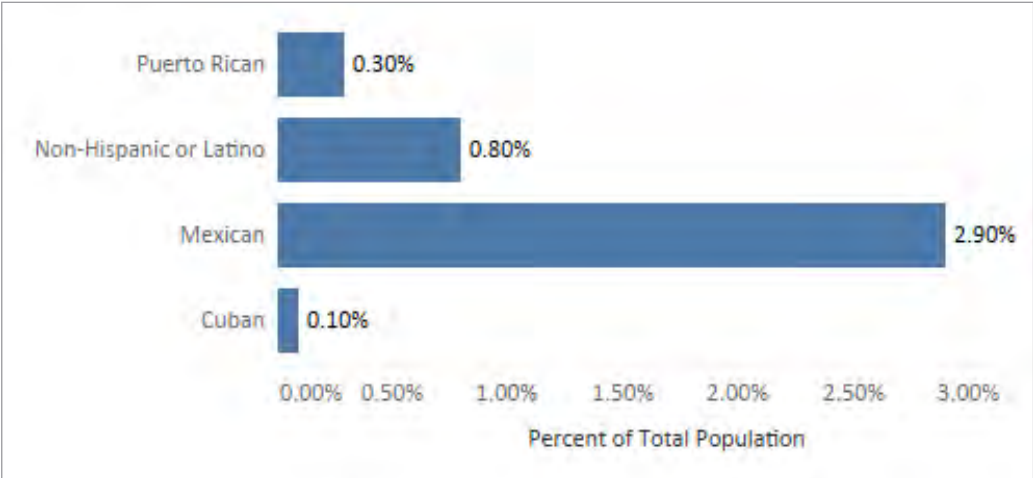


Figure 3 - Distribution of Hispanic or Latino population in Missouri - 2018
Source: U.S. American Community Survey – 2018 (1-Year Estimation)



Persons with a Disability

According to the World Health Organization, disability includes “impairments, activity limitations, and participation restrictions”. Since 2008, the American Community Survey (ACS) captures six aspects of disability including: hearing difficulty (deaf or having serious difficulty hearing (DEAR)), vision difficulty (blind or having serious difficulty seeing, even when wearing glasses (DEYE)), cognitive difficulty (having serious difficulty concentrating, remembering, or making decisions (DREM)), ambulatory difficulty (having serious difficulty walking or climbing stairs (DPHY)), independent living difficulty (having difficulty doing errands alone (DOUT)) and self-care difficulty (having difficulty dressing or bathing (DDRS)). People with disabilities have disparities in health outcomes. They live with challenges such as the lack of adequate accessible transportation, limited housing, unequal physical and programmatic access to public and private facilities, barriers to education and employment and reduced income.

Approximately 14.5% (approximately 873,521 people) of Missouri residents reported living with at least one disability in 2018, a proportion slightly above the national average (12.6%). Among the population with disability in Missouri, about 7.3% were children less than 18 years, 51.1% were adults between 18 to 64 years and 41.6% were age 65 or older. Cognitive impairment is the most prevalent disability among children with a disability whereas ambulatory and independent disability are most common among older adults age 65 and over (Figures 4 and 5).



Figure 4 - Disability types among Missourians with disabilities
Source: U.S. Census Bureau. American Community Survey – 2018 (1-Year Estimation)

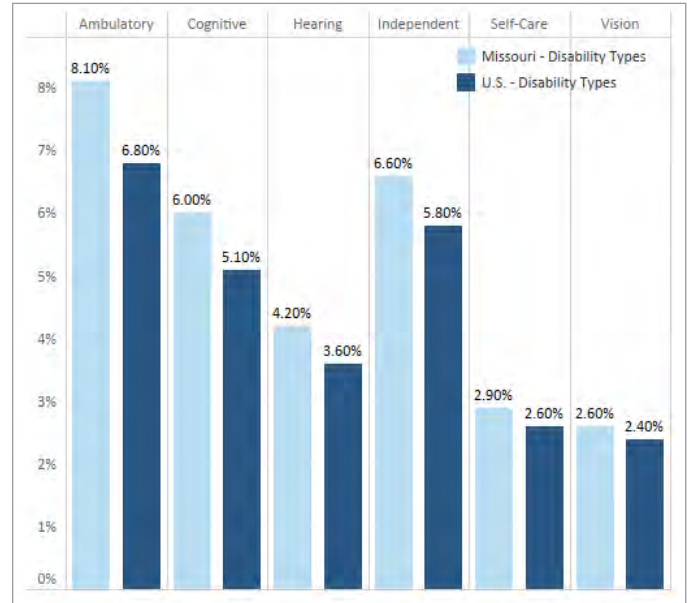
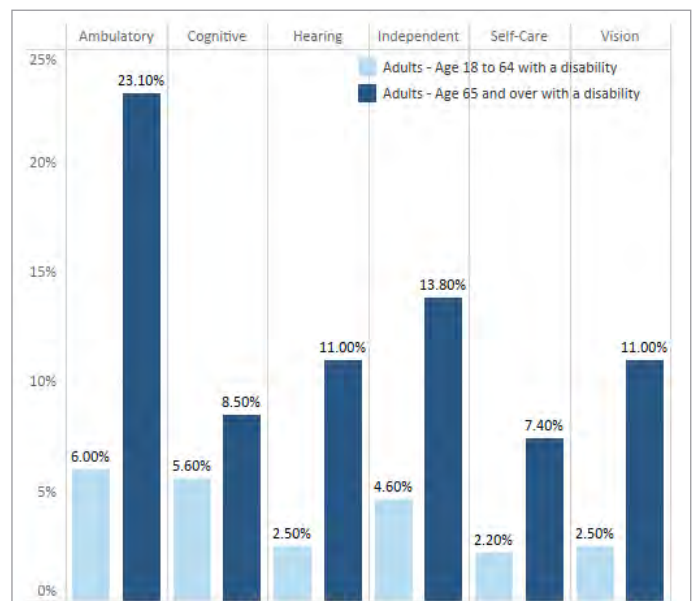


Figure 5 - Disability type by age among Missouri adults 18 years and over

Source: U.S. Census Bureau. American Community Survey – 2018 (1-Year Estimation)



Veterans Status

According to the 2018 U.S. Census Bureau, Missouri had 384,150 veterans, equating to 8.1% of the total population 18 years and over. Veterans are significantly older than non-veterans, the median age of a veteran being approximately 64 years compared with 44 for non-veterans (Figure 6). Like other states nationwide, veterans in Missouri are predominantly males (92.5%) compared to 7.5% females. The 2018 data also indicates that veterans below poverty level in Missouri was nearly 7.5%, the unemployment rate for 18 to 64 years was estimated at 4.4%, and the median income was \$37,417. Moreover, Missouri veterans are likely to have higher rate of being a high school graduate and some college or associates degree compared to non-veteran (Figure 7).

Figure 6 - Missouri veteran by age distribution, 2018
Source: U.S. Census Bureau. American Community Survey, 2018 (1-Year Estimation)

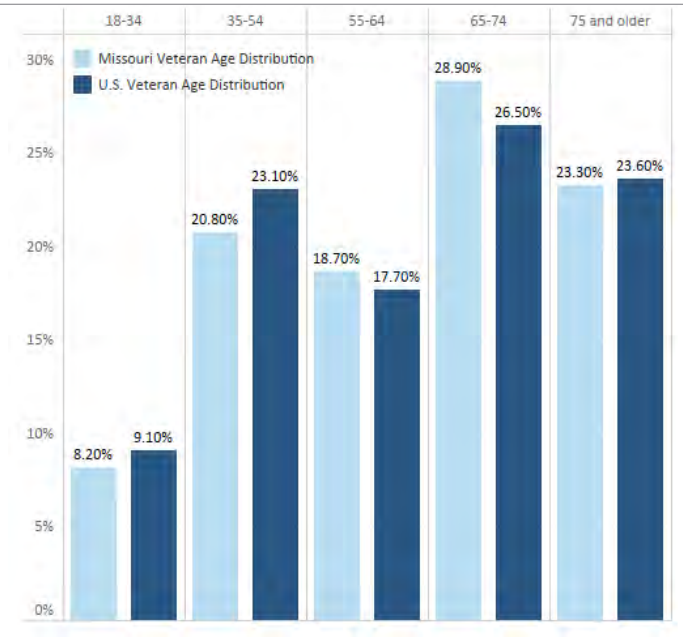
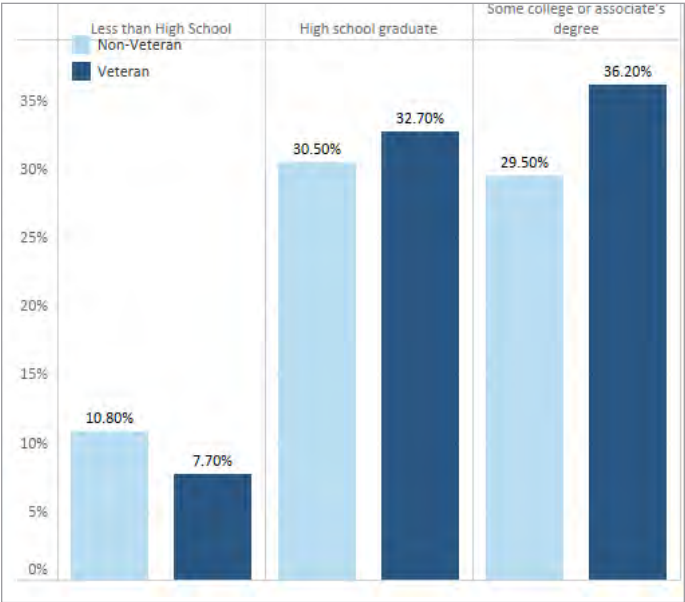


Figure 7- Education status of Missouri veteran population compared to non-veteran
Source: U.S. Census Bureau. American Community Survey, 2018 (1-Year Estimation)



LGBTQ

The acronym “LGBTQ” stands for lesbian, gay, bisexual, transgender and queer, though the term can also refer to and include other sexual orientations or gender identities that are not explicitly listed in the acronym. A limited number of surveys and reports include information on sexual orientation and gender identity, making it difficult to estimate the number of LGBTQ individuals and their associated health care needs. However, various health assessments show that LGBTQ individuals may be at increased risk for negative health behaviors (i.e., smoking, substance abuse) and outcomes (i.e., mental health, obesity). According to the 2018 Movement Advancement Project (MAP) report, there were 180,000 (about 3.8% of the 4,748,726 adults aged 18 and older) LGBTQ individuals in Missouri compared to 4.5% in United States.^v Of these individuals, 26.0% were raising children, and 62.0% were identified as female while 38.0% identified as male. Other information for the Missouri LGBTQ community is shown in Figures 8-10.

Figure 8 - Missouri LGBTQ people by age distribution

Source: Los Angeles, CA: The Williams Institute, UCLA School of Law, 2019

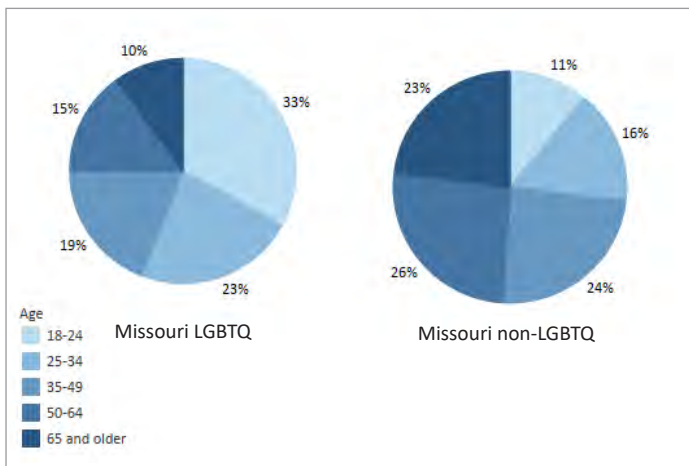


Figure 9 - Missouri LGBTQ people by education status, 2018

Source: Los Angeles, CA: The Williams Institute, UCLA School of Law, 2019

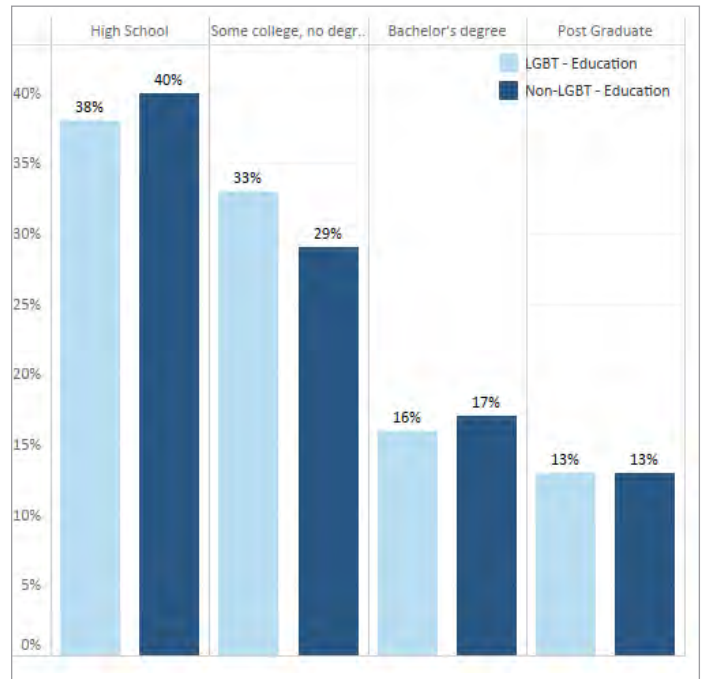
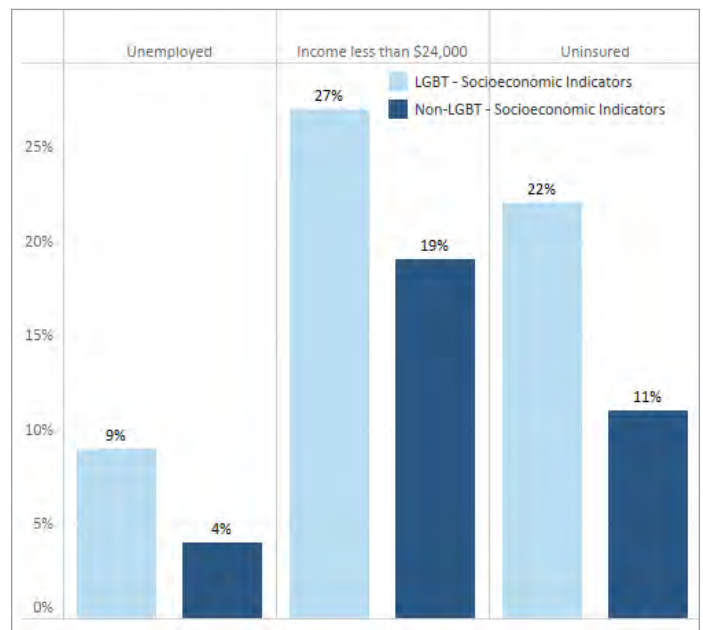


Figure 10 - Socioeconomics indicators – income, uninsured, and unemployed

Source: Los Angeles, CA: The Williams Institute, UCLA School of Law, 2019



SOCIAL DETERMINANTS OF HEALTH AND ACCESS TO CARE

According to the World Health Organization, “social determinants of health are non-medical factors that influence health outcomes. They are conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life.”^{vi}

Social determinants are mostly responsible for health inequities, the unequal and avoidable differences in health status within and between communities.^{vii} There is compelling evidence that medical care alone cannot adequately improve population health or reduce health disparities. To sufficiently address the overall health of the state population and reduce disparities and inequalities, health care and individual behaviors have to be addressed in combination with social, economic and physical environment. The County Health Rankings Model from the University of Wisconsin, Population Health Institute, School of Medicine and Public Health emphasizes improving health behaviors, social and economic factors, clinical care, and physical environment (Figure 11) not only make communities healthier places to live, learn, work and play but also shape the opportunities for the communities to be healthy, influencing how well and how long they live.^{viii}

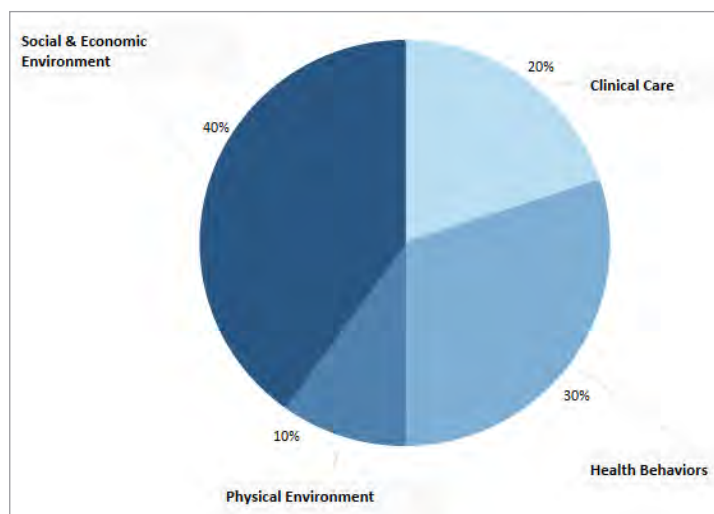
Social and Economic Factors

This section describes socio-economic conditions, which are shaped by social determinants of health, to provide a more complete picture of Missourians’ health. The conditions discussed include income, poverty, employment, education attainment, community safety and environmental factors. This information will be used to identify Missouri’s strategies and implementation plan to improve population health and health equity. Socio-economic status is a major determinant of health outcomes. According to the County Health Rankings Model from the University of Wisconsin, Population Health Institute, School of Medicine and Public Health, five socio-economic conditions represent 40.0% of tracked health factors. These factors are considered the key overarching issues contributing to health disparities among Missouri’s citizens.

Local health department and hospital assessments identified that numerous focus group surveys and key stakeholder informant participants recognized the following social determinants of health as key barriers to achieving optimal health: poverty, transportation, violence, education and affordable housing. The poor population in several communities are faced with challenges of accessing health care due to limited transportation and fixed incomes. Communities linked poverty to less educational attainment, lack of high-paying jobs, high rate of crime and violence, lack of access to affordable and quality housing and safe places for physical activity.

Figure 11- County Health Rankings Model

Source: <https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model>



Income, Poverty, Employment

Median household income reflects the relative affluence and prosperity of an area. Areas with a higher median household income are likely to have more educated residents and lower unemployment rates. Higher employment rates lead to increased access to healthcare and better health outcomes since many families receive health insurance through employers. From 2014-2018, the median household income in Missouri was approximately \$53,560, a level lower than the national median income of \$60,290 (Figure 12). The median

household income was lower among Black or African Americans (\$35,710) compared to whites (\$56,701) and Asian (\$67,526) (Table 2). During the same period, an estimated 14.2% Missourians were living below the poverty line. The highest percentage of population living under poverty line was among Native Hawaiian and other Pacific Islander (32.0%), Black or African American (26.0%), and Hispanic or Latino (23.0%) (Figure 13). Compared to U.S. and overall Missouri, Southeast Missouri region had the highest percent of population living under poverty line (20.3%) (Figures 14a-b).

Figure 12 - Median household income for Missouri and U.S., 2018

Source: U.S. Census Bureau. American Community Survey, 2014- 2018 (5-Year Estimation)

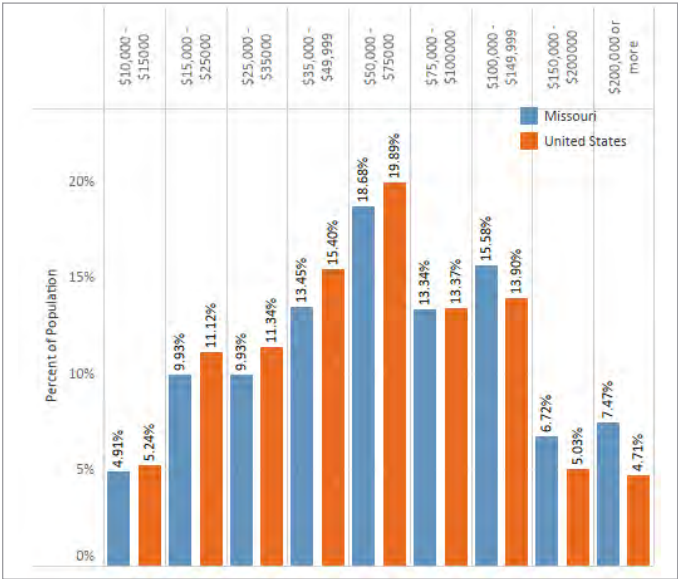


Figure 13 - Poverty rates by race/ethnicity

Source: U.S. Census Bureau. American Community Survey, 2018 (1-Year Estimation)

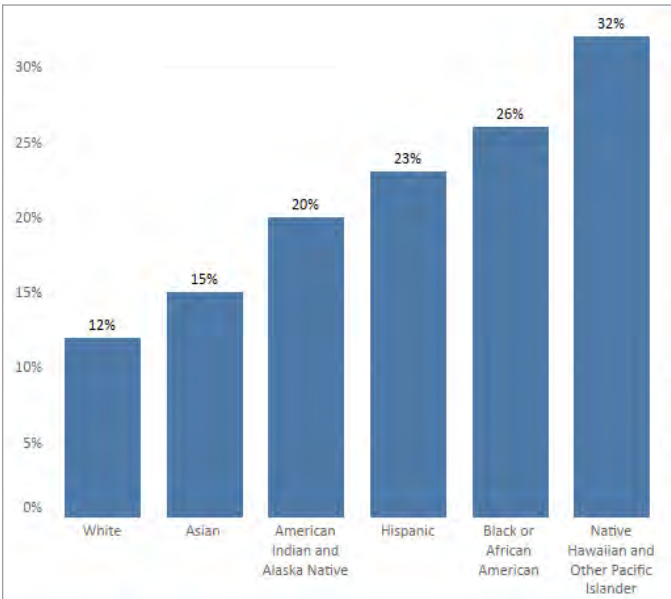


Figure 14a – Poverty rates for regions, compared to U.S. and Missouri
Source: U.S. Census Bureau and Missouri Economic Research and Information Center

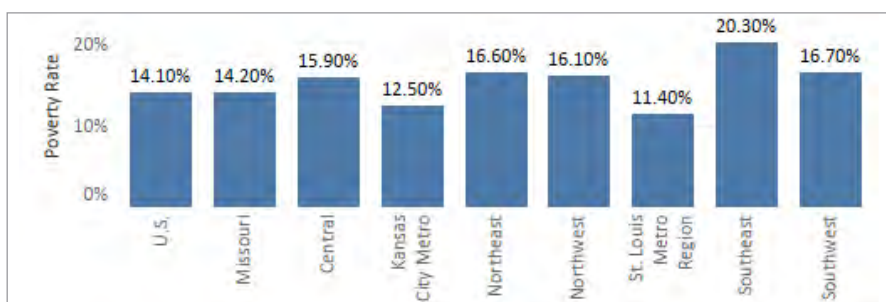


Figure 14b – Unemployment rates for regions, compared to U.S. and Missouri
Source: U.S. Census Bureau and Missouri Economic Research and Information Center

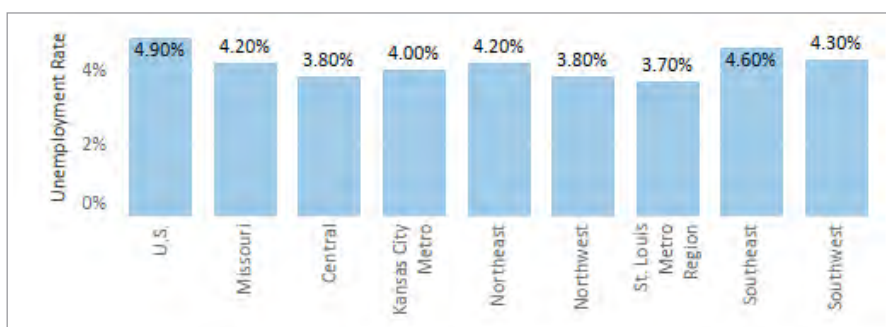


Table 2- Household median income by race in the past 12 months (in 2018 inflation-adjusted Dollars)
Source: U.S. Census Bureau, American Community Survey, 2018 (1-year estimation)

| | Missouri | U.S. |
|--|----------|----------|
| White | \$56,701 | \$63,917 |
| Black or African American | \$35,710 | \$40,155 |
| American Indian and Alaska Native | \$40,824 | \$41,879 |
| Asian | \$67,526 | \$83,898 |
| Native Hawaiian and Other Pacific Islander | \$48,696 | \$61,354 |
| Hispanic | \$45,677 | \$49,225 |
| Other race | \$37,554 | \$46,650 |

Education Attainment

Educational attainment has a substantial impact on a broad range of behavioral risks and health outcomes. In 2018, Missouri had a higher percent (90.5%) of population with high school graduate or higher compared to the U.S. graduation rate of 88.4% (Figure 15). However, the state experiences disparity in the overall education attainment across race/ethnicity. The

percent of Missourians with a bachelor’s degree or higher was lowest among Blacks or African Americans (18.2%), American Indian or Alaska Native (20.4%), Native Hawaiian and other Pacific Islander (20.4%) and Hispanic or Latino (20.7%) compared to Asian (59.0%) (Figure 16).

Figure 15 - Education attainment in Missouri compared to U.S.
Source: U.S. Census Bureau. American Community Survey – 2018 (1-Year Estimation)

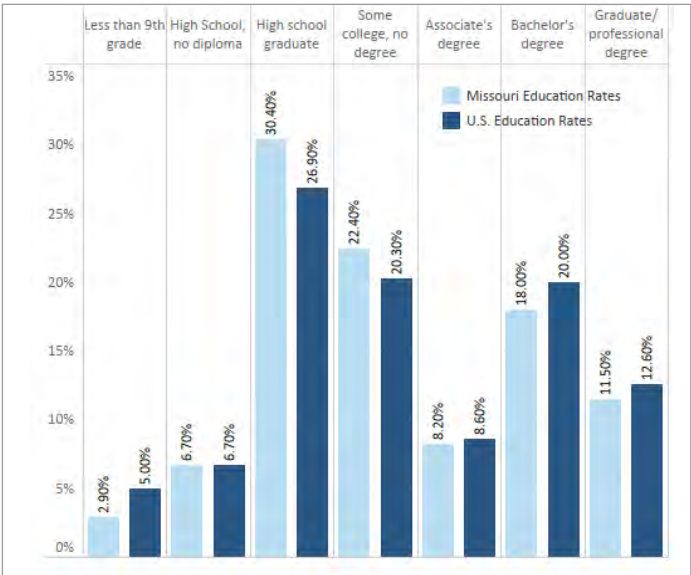
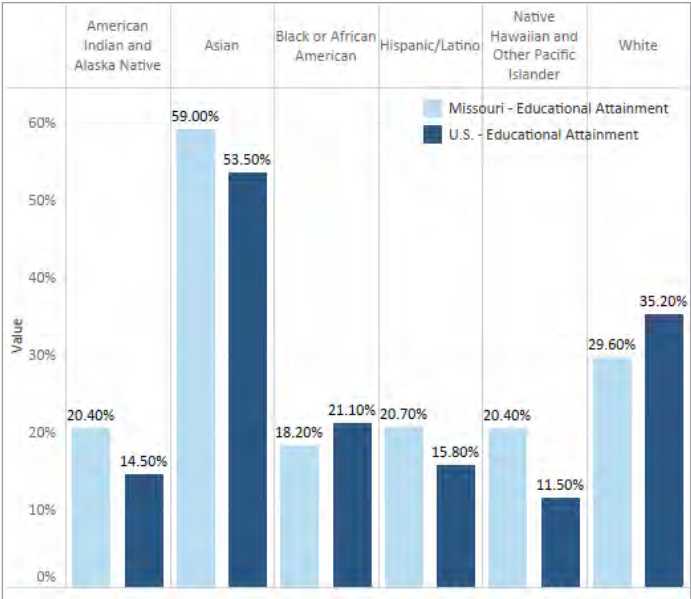


Figure 16 - Education attainment in Missouri compared to U.S.
Source: U.S. Census Bureau. American Community Survey – 2018 (1-Year Estimation)



Community Safety

Unintentional Injuries

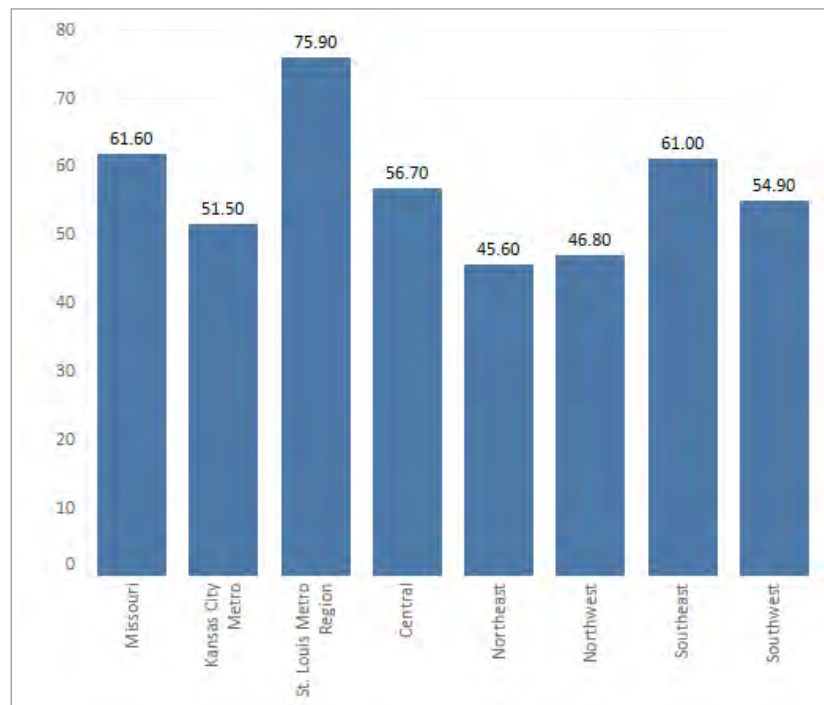
Unintentional injuries occur without intent of harming oneself or others, while intentional injuries result from purposeful actions. Unintentional injuries have been the fourth leading cause of death among the total Missouri population since 2011. In 2018, the age adjusted rate per 100,000 for unintentional cause of death was 65.5, with accidental poisoning (26.1), motor vehicle traffic deaths (15.2) and falls (10.1) being the primary contributors. St Louis Metro region had the highest unintentional injuries rate at 75.9 (Figure 17).

Violence and Intentional Injuries

According to the Federal Bureau of Investigation (FBI) Uniform Crime Reporting (UCR) Program, violent crime rate (the number of violent crimes reported per 100,000 population) is composed of four offenses: murder and non-negligent manslaughter, rape, robbery and aggravated assault. Violent crime can have a physical safety and psychological impact on the health of a community. In 2018, Missouri's rate of violent crime was 502.1 per 100,000 population, which was above the U.S. rate of 380.6, aggravated assault had the highest rate per 100,000 population (359.8), followed by robbery (84.8), rape (47.5) and murder (9.9).^{ix}

Figure 17- Region unintentional deaths compared to overall Missouri, 2018

Source: Missouri Department of Health and Senior Services, (age-adjusted rate per 100,000)



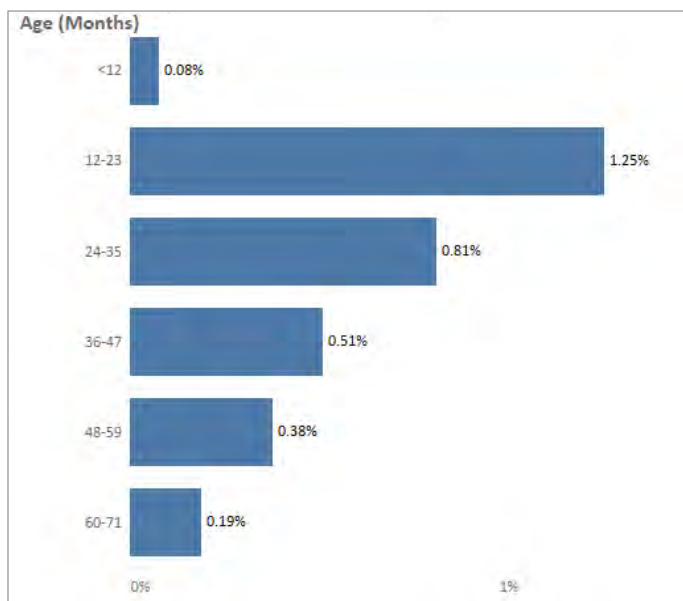
Environmental Health

Lead Levels

Lead poisoning occurs when lead levels build up in the blood, often over months or years. Children younger than 6 years are particularly vulnerable to the toxic effects of lead, which can severely affect the development of the brain and nervous system. There is no 'safe' blood lead exposure in children that has been identified; even blood lead concentrations as low as 5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) have been associated with damage to the brain and nervous system, slowed growth and development, behavioral difficulties and learning problems. The Centers for Disease Control and Prevention Childhood Lead Poisoning Prevention Program is committed to prevent childhood lead exposure before harm occurs.^x

Figure 18- Missouri child lead poisoning: percent of population with elevated blood lead by age

Source: Missouri Department of Health and Senior Services, 2018

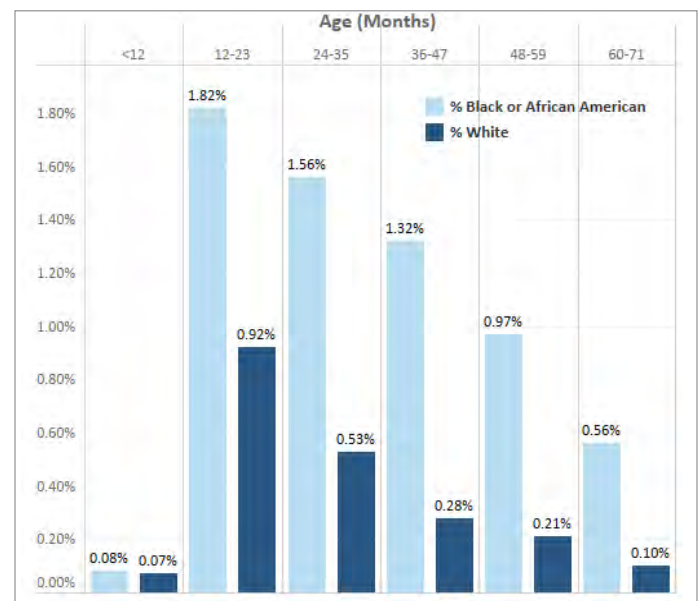


Missouri is the leading lead-producing state in the country. Of the 83,633 children less than six years of age tested in 2018 in Missouri, 2,033 resulted in blood lead levels between 5 and 9.9 $\mu\text{g}/\text{dL}$ and 515 had blood lead levels greater than or equal to 10 $\mu\text{g}/\text{dL}$.^{xi} Of children 0-5 years (<72 months) with elevated lead poisoning, the highest percentage was among Black or African American age 12 -23 months (1.82%) compared to white children of the same age (0.92%) (Figure 18 and 19).

Lead also causes long-term harm in adults, including increased risk of high blood pressure and kidney damage. Exposure of pregnant women to high levels of lead can cause miscarriage, stillbirth, premature birth and low birth weight.

Figure 19- Missouri child lead poisoning: percent of population with elevated blood lead by race

Source: Missouri Department of Health and Senior Services, 2014-2018

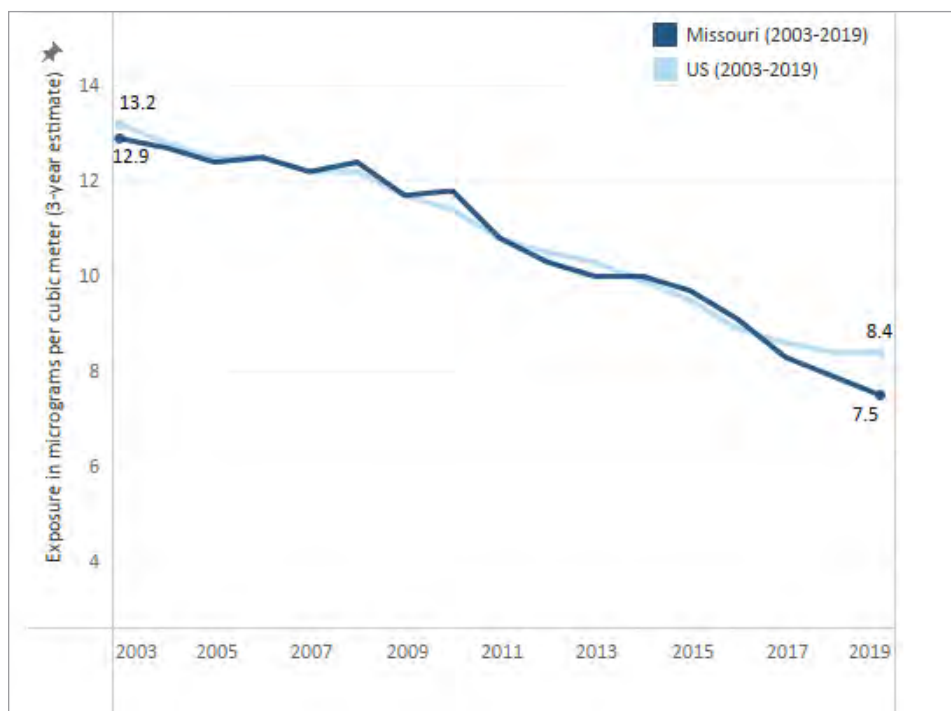


Air Quality

There is wide scientific consensus that long-term exposures to air pollution contribute to an increased risk of illness and death from ischemic heart disease, lung cancer, chronic obstructive pulmonary disease (COPD), lower-respiratory infections (e.g., pneumonia), stroke, type 2 diabetes and adverse birth outcomes. Globally, in 2019 air pollution was estimated to have contributed to 6.67 million deaths worldwide, nearly 12% of the global total.^{xii} In addition, a study of 60 million Americans shows that long-term exposure to airborne fine particulate matter (PM2.5) and ozone increases the risk of premature deaths, even when that exposure is at levels below the National Ambient Air Quality Standards (NAAQS) currently in place by the U.S. Environmental

Protection Agency.^{xiii} The Missouri Department of Natural Resources (DNR) has approximately 50 air monitors located throughout the state, monitoring concentrations of six key types of air pollutants; ozone (O3), particulate matter (PM2.5 and PM10), Nitrogen Oxide (NO2), lead (Pb), and sulphur dioxide (SO2) in compliance with Clean Air Act regulations. PM2.5 are fine particulate matter with diameters that are generally 2.5 micrometers and smaller.^{xiv} Currently 15 sites monitor PM2.5 in Missouri and, according to a 2020 DNR assessment report, these monitors have met the annual standard during for recent years. According to America's Health Ranking 2018 report, Missouri average exposure of the general public to particulate matter of 2.5 microns or less decreased by approximately 42.0% from 2003 to 2019 (Figure 20).^{xv}

Figure 20- Average exposure of the general public to particulate matter of 2.5 microns or less (PM2.5) measured in micrograms per cubic meter (3-year estimate)
Source: American Health Ranking, 2020



Housing

Studies have shown that housing is an important determinant of health. Housing-related health risks include respiratory and cardiovascular diseases from indoor air pollution, the spread of communicable diseases due to poor living conditions and risks of injury. The U.S. Department of Housing and Urban Development (HUD) annually receives data from the U.S. Census Bureau known as the Comprehensive Housing Affordability Strategy (CHAS) that demonstrate the extent of housing problems and housing needs, particularly for low-income households. Four severe housing problems in CHAS data are defined as: 1) housing with incomplete kitchen facilities; 2) housing unit with incomplete plumbing facilities; 3) overcrowded household (more than 1.5 persons per room); and 4) cost burden greater than 50.0%. According to HUD, CHAS data shows in 2019 there were 14.5% of occupied houses with at least one of four severe housing problems in Missouri compared to 18.6% in the nation (Figure 21). Black or African American and Hispanics have the highest percentage of occupied housing unit with at least one of the four severe housing problems, 26.3% and 24.9%, respectively, compared to 12.4% for whites (Figure 22).

Figure 21- Percentage of households with at least 1 of 4 housing problems overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities in Missouri, compared to the U.S.

Source: America's Health Rankings analysis of U.S. Department of Housing and Urban Development, Comprehensive Housing Affordability Strategy

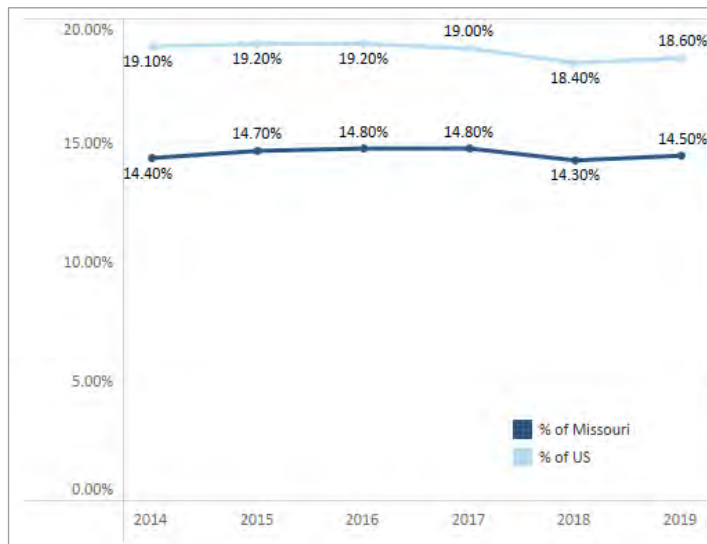
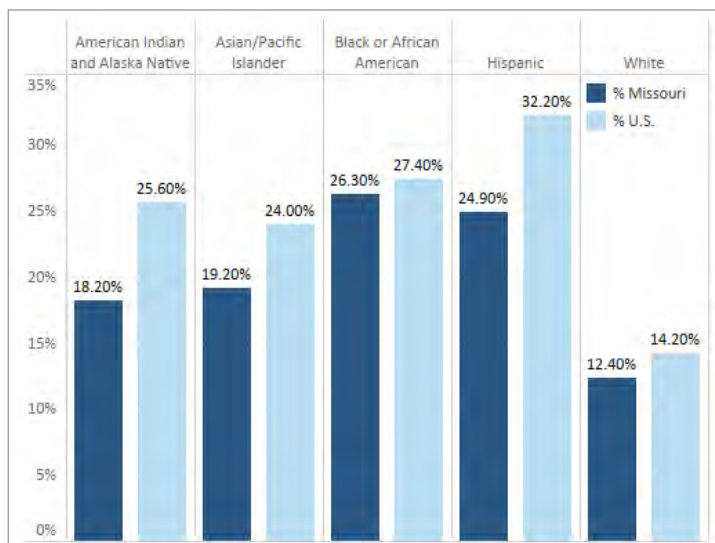


Figure 22- Percentage of households with at least 1 of 4 housing problems overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities by race/ethnicity

Source: America's Health Rankings analysis of U.S. Department of Housing and Urban Development, Comprehensive Housing Affordability Strategy



Access to Health Care

Access to comprehensive, quality health care services is important for achievement of health equity and for improving the quality for all Missourians. There are four components of access to care: insurance coverage, health services, timelines and workforce.

The percent of uninsured Missourians has been declining since 2014 when it was 11.7% (Figure 23). The U.S. Census Bureau reported 9.4% Missourians were uninsured in 2018 compared to 8.9% nationally. The Northwest, Central, and Southeast regions continue to have a higher percent of uninsured Missourians compared to the rest of the state (Figure 24). Likewise, Black or African Americans and American Indian/Alaska Natives are more likely to be uninsured than whites (Figure 25). Age 19-64 are more likely to be uninsured compared to under 19 years (Figure 26).

Figure 23 - Percent of Uninsured Population in Missouri, 2014 – 2018

Source: U.S. Census Bureau. American Community Survey – 2018 (5-Year Estimation)

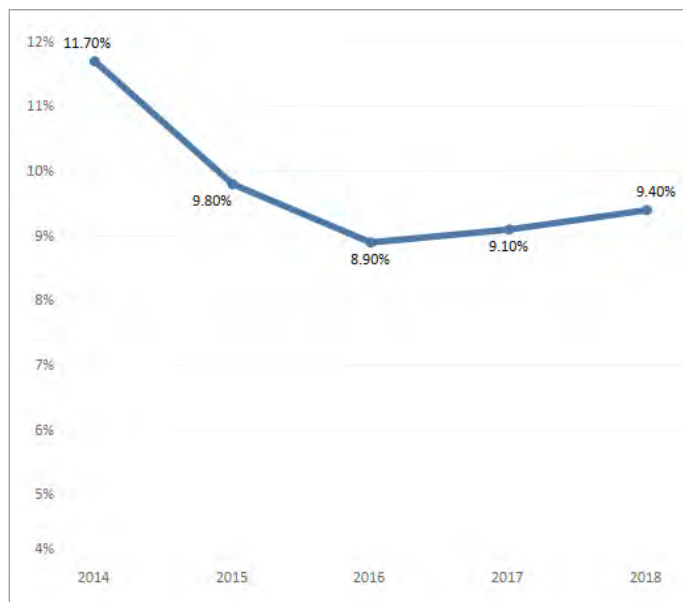
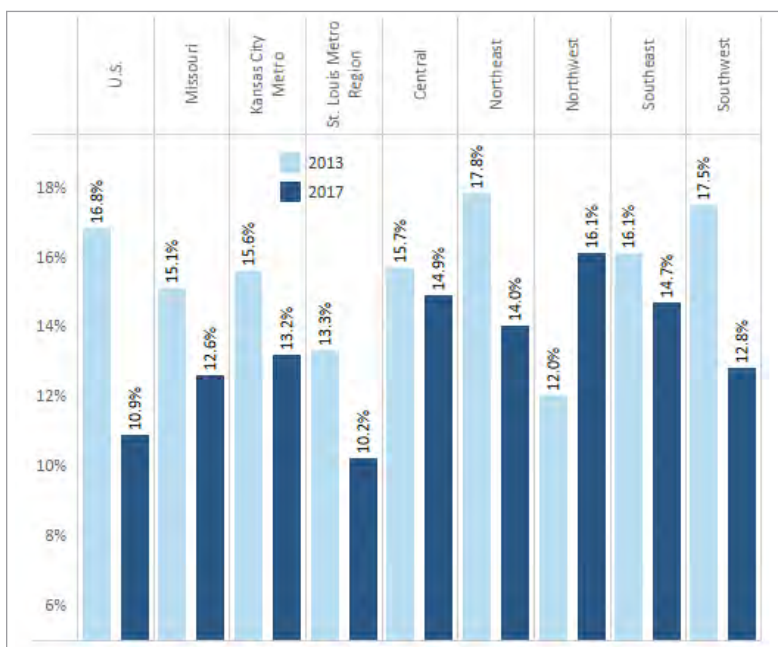


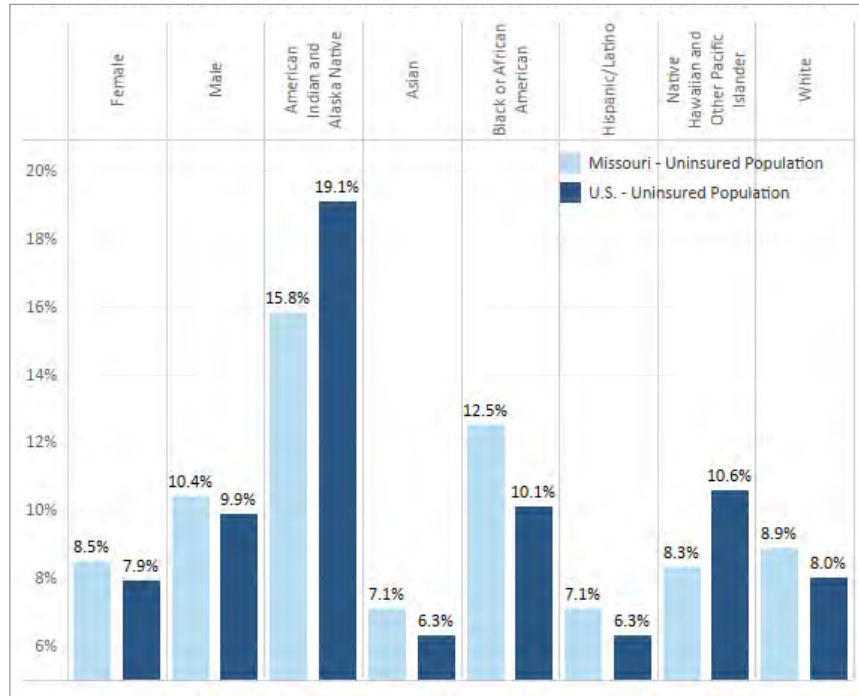
Figure 24 - Percent of Missouri uninsured population by region, compared to U.S. and Missouri, 2018

Source: Missouri Department of Health and Senior Services. Census Bureau – 2018 (1-Year Estimation)



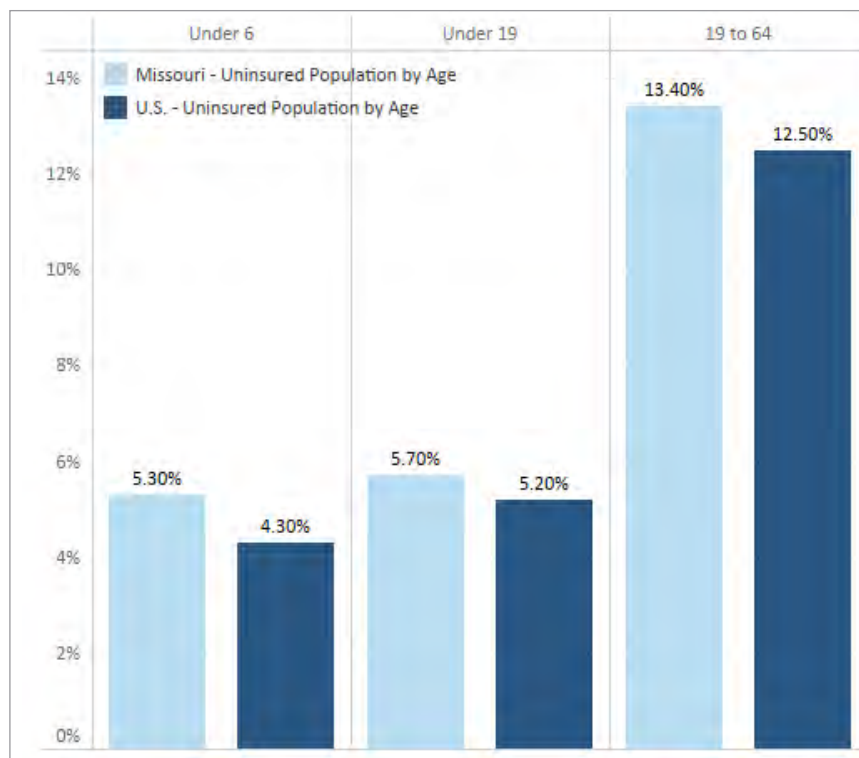
**Figure 25 - Percent of Missouri uninsured population
by race and gender, 2018**

Source: Missouri Department of Health and Senior Services. Census Bureau – 2018 (1-Year Estimation)



**Figure 26 - Percent of Missouri uninsured population
by age group, 2018**

Source: Census Bureau. American Community Survey – 2018 (1-Year Estimation)



Health Resource Availability

Access to quality medical professionals, facilities and funds play a crucial role in maintaining and promoting good health, preventing avoidable deaths, managing various disease states and providing equality in health care. Increasing access to both routine medical care and medical insurance are vital steps in improving the overall health of all Americans.

According to the CDC, about 70.6% of Missouri adults 18 years and above reported having a primary doctor or health care provider in 2018. Older adults, 65 years and above are more likely to have health care providers compared to ages 18-24 (84.5% and 46.8%, respectively) (Figure 27). The ratio of Missourians to primary care provider tends to be higher than the national ratio. However, the Missouri ratio decreased from 2014 to 2017. Conversely, the ratio of Missourians to both dentists and mental health providers increased for the same time period (Table 3).

Figure 27 - Percent of Missouri adults who have a personal doctor or health care provider

Source: CDC. Missouri Behavioral Risk Factor Surveillance System – 2018

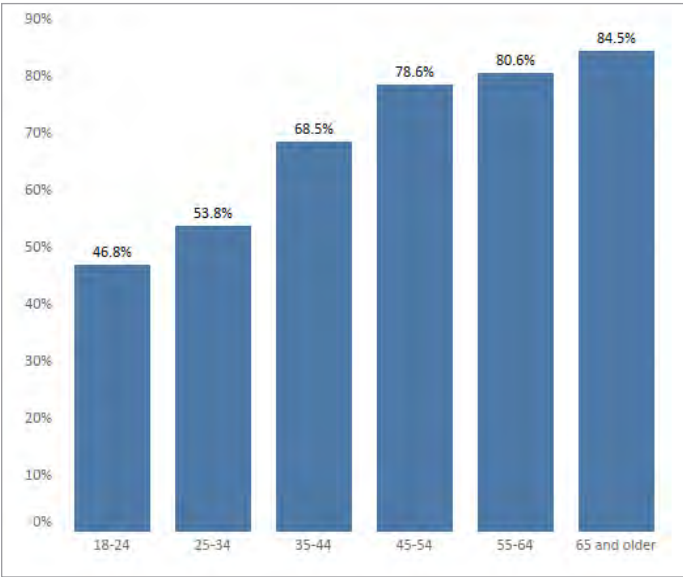


Table 3- Healthcare Resources Availability (Population per provider)

Source: County Health Ranking, 2016

| | Missouri-2014 | Missouri-2017 | U.S.-2014 | U.S.-2017 |
|-------------------------|---------------|---------------|-----------|-----------|
| Dentist | 1,760.00 | 1,870.00 | 1,260.00 | 1,340.00 |
| Mental Health Providers | 590.00 | 692.00 | 330.00 | 412.00 |
| Primary Care Physicians | 1,455.00 | 1,430.00 | 1,051.00 | 1,030.00 |



MISSOURI HEALTH ASSESSMENT PROCESS

Late in 2019 Missouri Department of Health and Senior Services (DHSS) staff and leadership met to discuss health indicators to be included in the State Health Assessment (SHA). DHSS also reviewed Local Public Health Agency (LPHA) Community Health Assessments (CHAs)/Community Health Improvement Plans (CHIPs) as well as Hospital Community Health Needs Assessments (CHNAs). The results were used to produce the state health status and state themes and strengths assessments.

In February 2020, an in-person meeting of the State Health Partner Group was held in Jefferson City, Missouri to discuss and analyze the State Public Health System Assessment and the state Forces of Change assessment. Over the course of the two days 70 participants, representing approximately 50 organizations, participated in conversations and exercises that would lay the foundation for the State Health Assessment. The responses to the Strength/Weakness/Opportunity/Threat (SWOT) exercise were analyzed for the State Health System Assessment. The discussions concerned values and the overall vision of the State Health Partner Group. Due to impacts from the COVID-19 pandemic, the group was unable to meet again in person. Subsequent meetings were conducted virtually.

The SHA aims to answer the question “what does the health of Missourians really look like at this moment in time?” The assessments contained within provide some answers, and are brought together in the Key Health Issues section. COVID-19 was not named as one of those issues. The pandemic continues to affect the state. However, the issues raised by the pandemic fall into a number of categories and this document aims to identify the root causes. Through the process of creating the SHA, the strength of the Missouri health system is abundantly clear. When the pandemic hit, team members from the DHSS, as well as the state’s local public health agencies, hospitals, non-profits and others came together. Not only did they work to keep Missourians healthy and safe, but also participated in this health assessment process.

DHSS used the Mobilizing for Action through Planning

and Partnership (MAPP) model to identify the key health issues facing Missouri’s citizens and its collective health system.

The model is designed as a strategic tool for assessing the effectiveness of local public health systems. The MAPP model was co-developed by the National Association of County and City Health Officials (NACCHO) and the Centers for Disease Control and Prevention (CDC). The strength of this model lies in community involvement. In the case of the DHSS assessment process, that means ensuring that stakeholders from across the state and all sectors involved in the health system were included.

The MAPP process utilizes four foundational assessments: State Health Status Assessment, State Themes and Strength Assessment, State Public Health System Assessment and State Forces of Change Assessment. Each of the assessments work in coordination to identify key issues that are currently occurring within the public health system. Additionally, they identify the gaps between the current situation and the overall goals of the system and provide the basis on which strategies to combat those health concerns are built.

Overall, the goal of the assessment process is to answer five questions:

- What is the health profile of Missouri residents?
- How healthy are the citizens of Missouri?
- What are the citizens’ beliefs and perceptions of their own health?
- What are the perceptions of the key stakeholders about the health of Missourians?
- What are the strengths and weaknesses of the Missouri Statewide Public Health System?

STATE HEALTH STATUS ASSESSMENT

Background

The State Health Assessment identifies priority issues associated with community health and quality of life using social and epidemiological data. Questions answered relate to the overall health and quality of life of the citizens in the state.

General health status of a population can be measured by birth/death rates, life expectancy, quality of life, morbidity from specific diseases, risk factors, use of ambulatory care and inpatient care, accessibility of health personnel and facilities, health care financing, health insurance coverage and other factors.

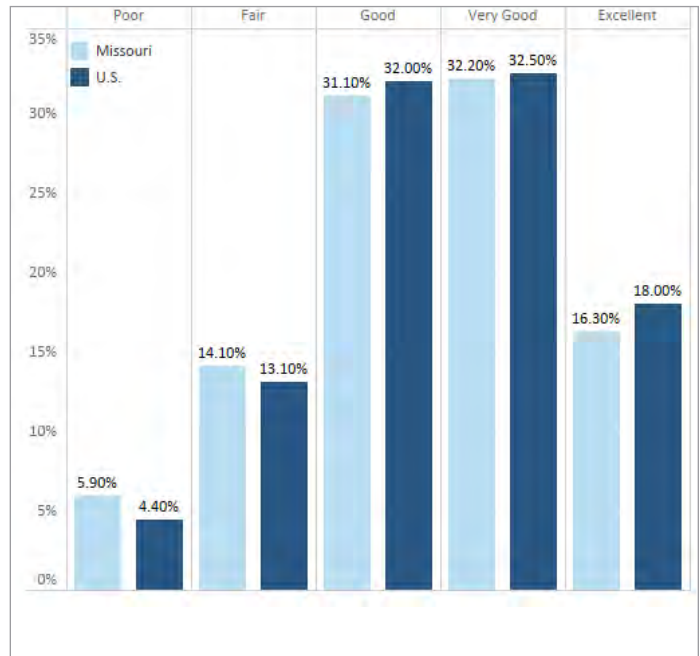
Quality of Life

According to the 2018 Missouri Behavioral Risk Factor Surveillance System (BRFSS), nearly 20.0% of Missourians reported their health status as fair or poor (14.10% and 5.90% respectively), and approximately 63.0% reported their health status as either very good or good (32.0% and 31.1% respectively) (Figure 28). Among respondent Missourians who reported their health was fair or poor, there are specific demographic characteristics and disparities associated:

- Female respondents were more likely to report fair or poor health than male respondents.
- Fair or poor health is reported more frequently by age 55 and over.
- Black or African Americans and American Indian/Alaskan Natives were more likely to report fair health while Hispanics were much more likely to report poor health.
- The lower the level of educational attainment the higher the percentage reporting of fair or poor health.
- Respondents of household income \$24,999 and under reports a higher rate of fair or poor health relative to household respondents of \$35,000 and higher (Centers for Disease Control and Prevention, BRFSS, 2018).

Figure 28 - Missouri and U.S. population self-reported general health status – 2018

Source: CDC. Behavioral Risk Factor Surveillance System – 2018



Mortality

The data shown in this section provide a picture of the overall mortality by BRFSS regions and overall mortality by race (2013 compared to 2018) (Figures 29 and 31); the leading causes of death in Missouri (2014 compared to 2018) (Figure 30); and 2018 data for deaths related to cancer, heart disease, and diabetes (Figures 32 and 33).

Figure 29 - Overall (all-causes) mortality per 100,000 (age adjusted)(2013 and 2018)

Source: Missouri Department of Health and Senior Services. CDC, National Center for Health Statistics – 2014 and 2018

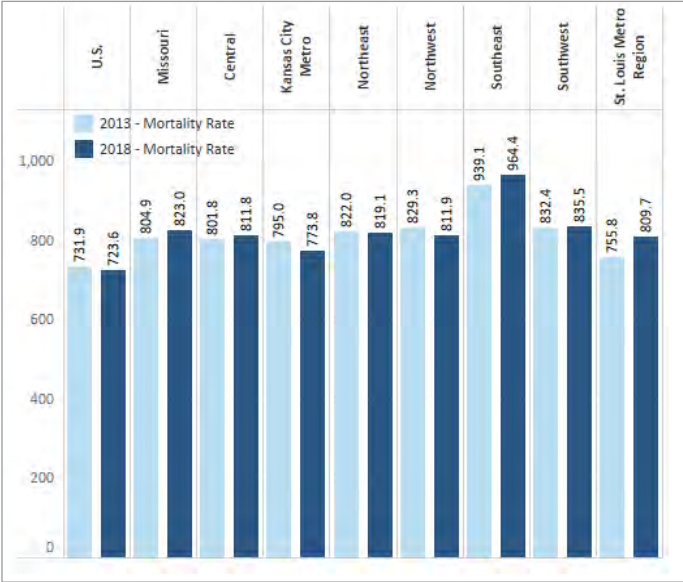


Figure 30 - Leading causes of death in Missouri per 100,000 (age-adjusted) (2014 and 2018)

Source: Missouri Department of Health and Senior Services

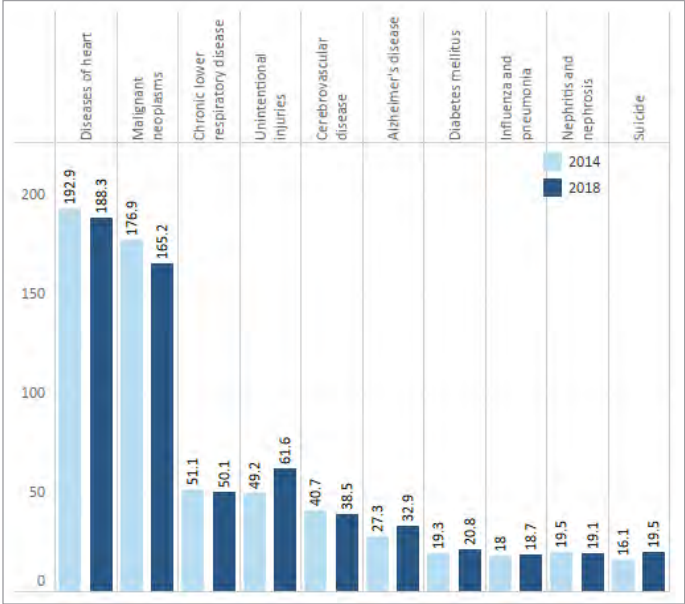


Figure 31 - Overall (all-causes) mortality per 100,000 by race (age-adjusted) (2013 and 2018)

Source: Missouri Department of Health and Senior Services

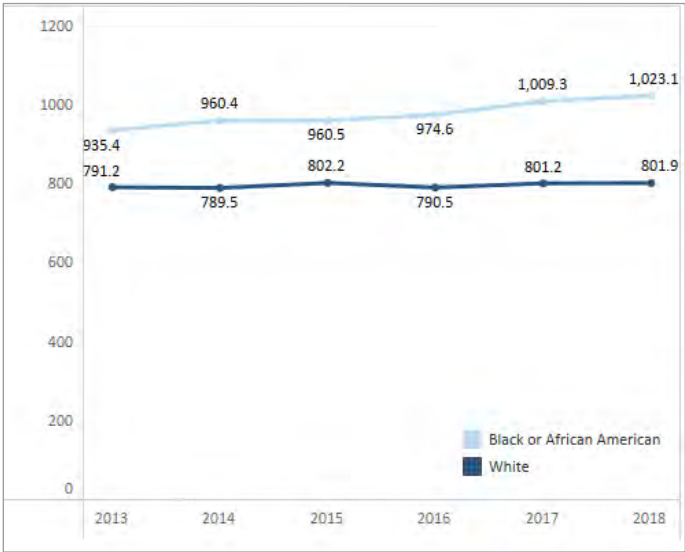


Figure 32 - Regional cancer, heart and diabetes deaths - Compared to U.S. and Missouri – 2018

Source: Missouri Department of Health and Senior Services. CDC, National Center for Health Statistics – 2018

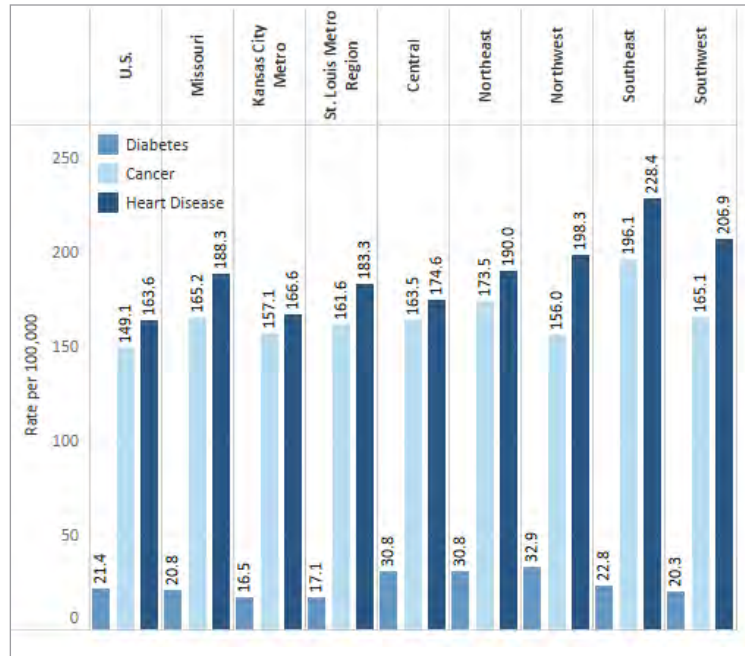
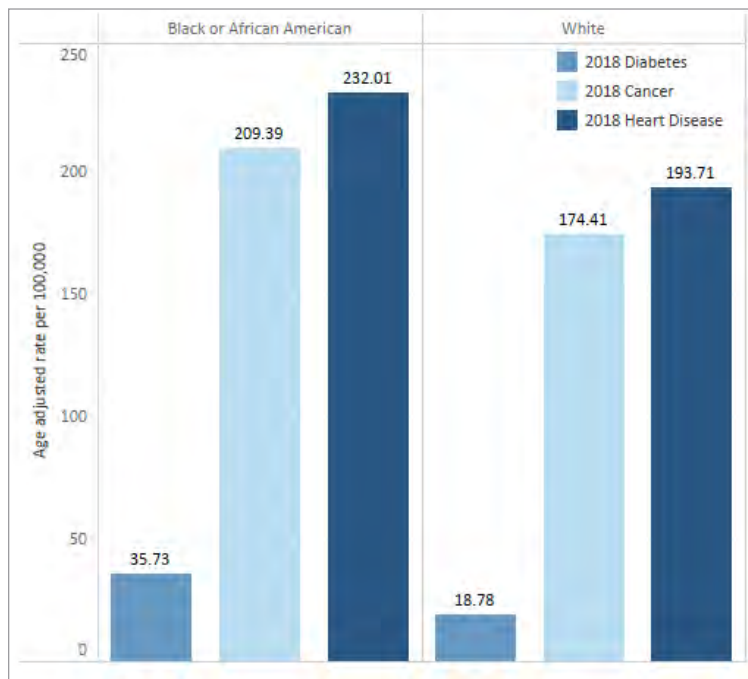


Figure 33 - Missouri cancer, heart, and diabetes deaths by race – 2018

Source: Missouri Department of Health and Senior Services, age adjusted, 2018



Premature Deaths

Years of potential life lost (YPLL) is an estimate of the average years a person would have lived if he or she had not died prematurely. In Missouri, YPLL represents the total number of years not lived by an individual who died before age 75. It is therefore a measure of premature mortality and is a good measure of the overall health of the state. The YPLL for all causes of death has been increasing in Missouri (Figures 34, 35 and 36).

According to the National Center for Health Statistics Web-based Injury Statistics Query and Reporting System (WISQARS) Years of Potential Life Lost (YPLL) 2018 Report, unintentional injury (25.4%), cancer (12.9%), heart (11.9%), suicide (9.7%), and homicide (7.9%) contributed to the highest rate of premature deaths.xvi

Figure 34 - Missouri years of potential life lost, all causes (rate per 100,000) (2009 - 2018)

Source: Missouri Department of Health and Senior Services – 2018



Figure 35 - Years of potential life lost by cause per 100,000 population (2013 and 2018)

Source: Missouri Department of Health and Senior Services – 2018

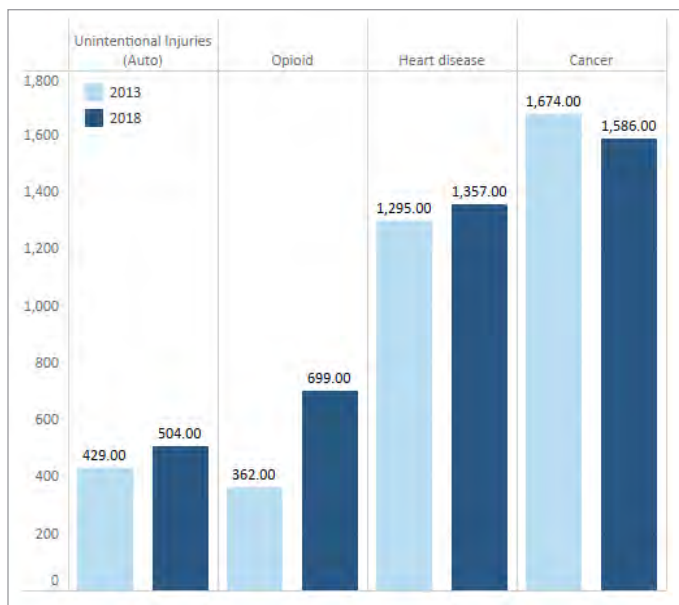
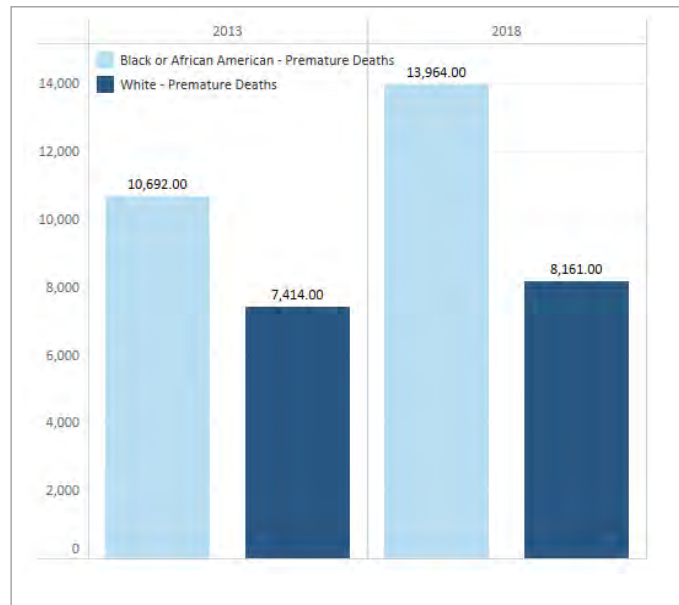


Figure 36 - Missouri premature deaths by race, per 100,000 population (age-adjusted) (2013 and 2018)

Source: Missouri Department of Health and Senior Services – 2018



Life Expectancy

Life expectancy at birth reflects the overall mortality level of a population because it shows the average age of death in a population. Like YPLL, life expectancy is good measure of overall health of the state. The following indicators show the disparity in life expectancy across Missouri regions and the disparity between male and female. Missouri life expectancy at birth decreased by 0.7 years from 2014 (77.7) to 2018 (77.0) (Figure 37). The lowest life expectancy was in Southeast region (75.2) compared to Missouri (77.4) and St. Louis Metro (78.0) (Figure 38). Black or African Americans are more likely to have lower life expectancy (72.3) than whites (77.6) (Figure 39) and Missouri males (74.9) have lower life expectancy than females (80.0) (Figure 40).

Figure 37- Life expectancy for regions, U.S. and Missouri, 2018 compared to 2014

Source: Missouri Department of Health and Senior Services, and CDC, National Center for Health Statistics (NCHS) (2014 and 2018)

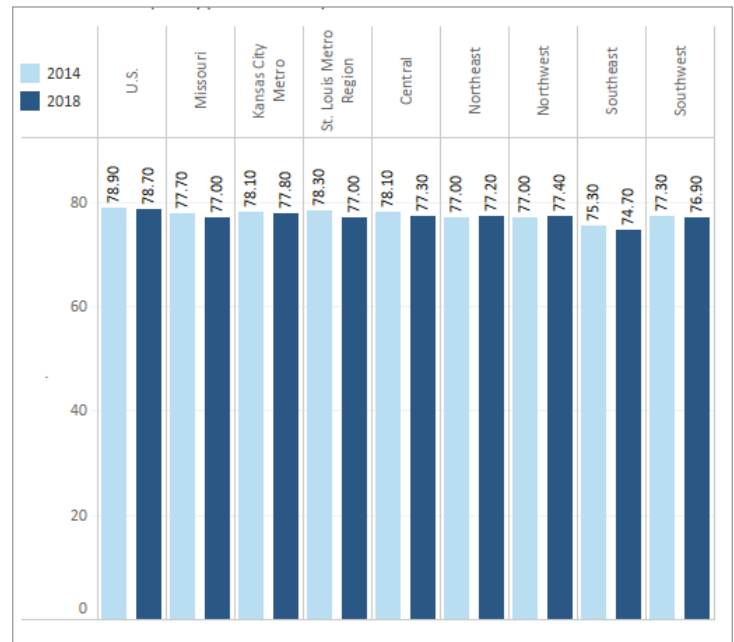
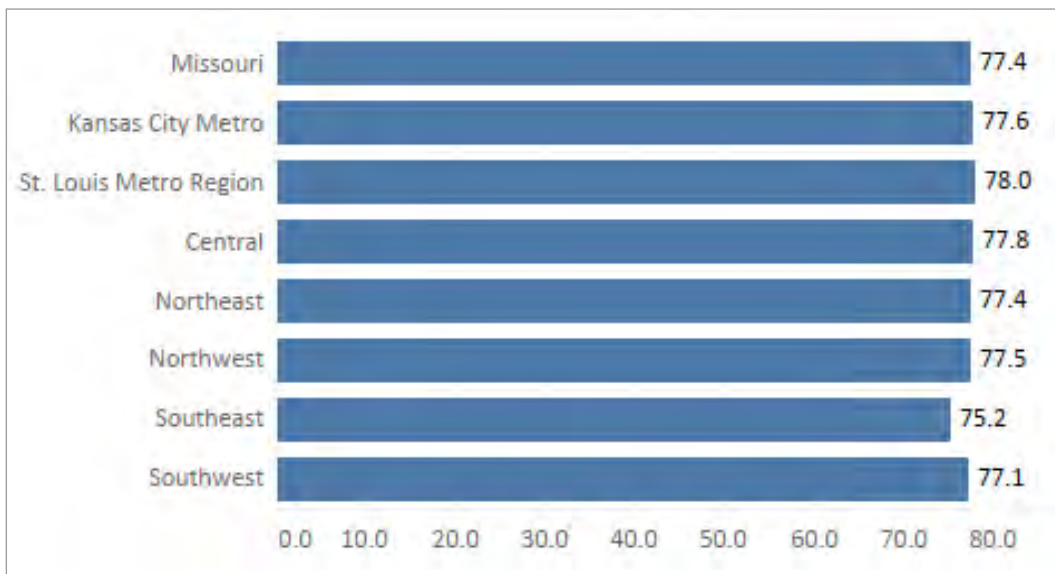


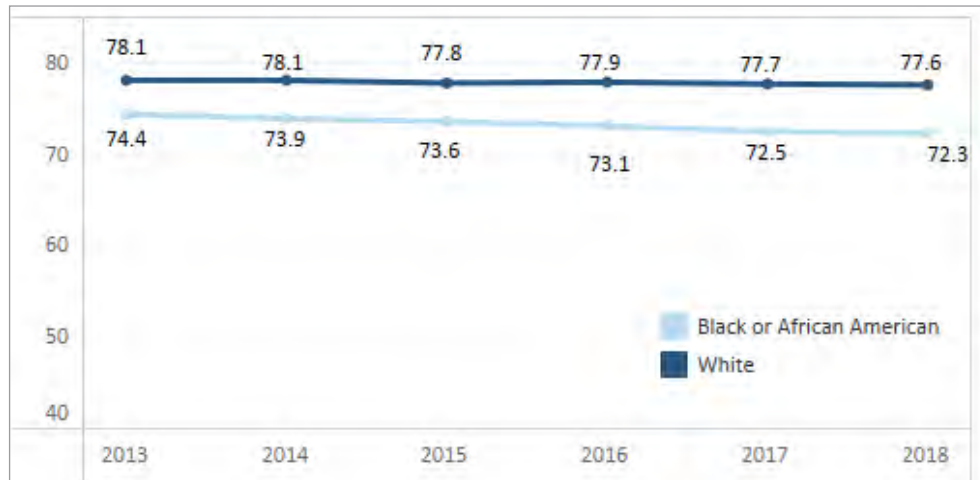
Figure 38 - Life expectancy at birth by Missouri regions, compared to overall Missouri, 2008-2016

Source: Missouri Department of Health and Senior Services, and CDC, 2018



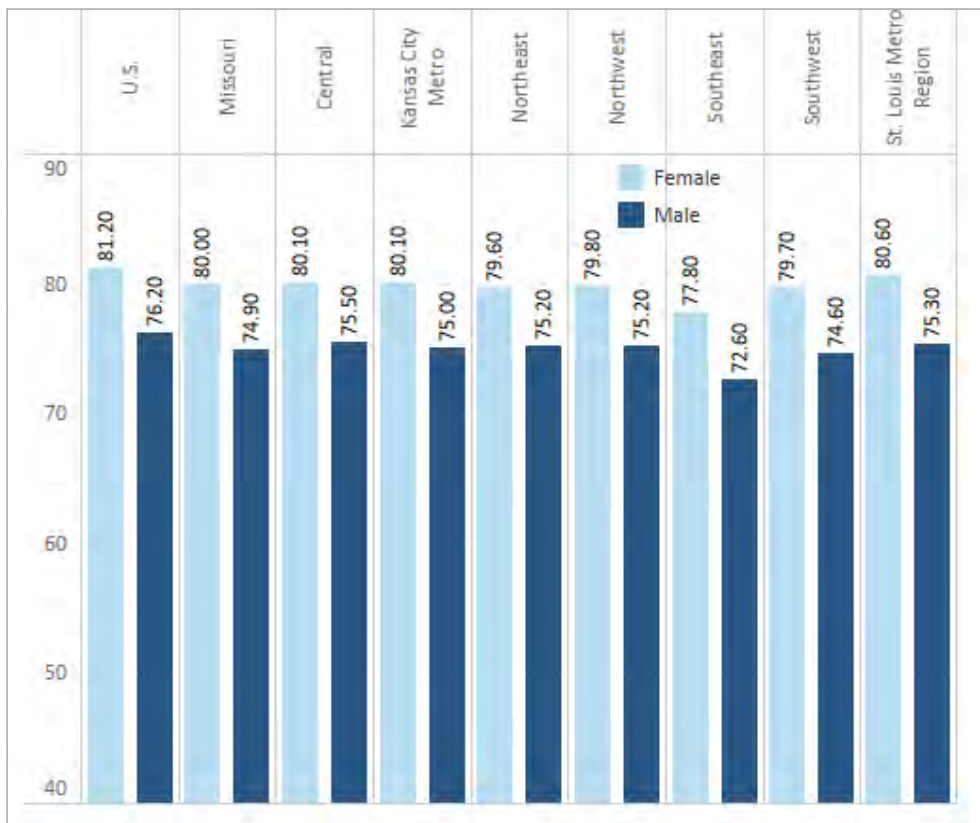
**Figure 39 - Missouri life expectancy at birth,
by race (2013-2018)**

Source: Missouri Department of Health and Senior Services – 2018



**Figure 40 - Missouri life expectancy at birth,
by gender (2008-2016)**

Source: Missouri Department of Health and Senior Services, and CDC, National Center for Health Statistics (NCHS) (2014 and 2018)



Opioid and Drug Overdose

According to the National Institute on Drug Abuse in 2019 nearly 50,000 people in the United States died from opioid-involved overdoses, including prescription pain relievers, heroin, and synthetic opioids such as fentanyl.^{xvii} In Missouri, the rate of opioid-related deaths was 22.4 per 100,000 (1,375 deaths), an increase of 25.7% from 2019 (total of 1,094 deaths) (Figure 41). Deaths involving heroin have gradually been on the decline in Missouri, with a most recent rate of 2.4 per 100,000 (or 145 deaths) in 2020, a decrease of 35.3% from 2019 (where there were 224 deaths). However, deaths involving synthetic opioids other than methadone (primarily fentanyl and its analogs) rose 36.2% from 884 deaths (a rate of 14.4) in 2019 to 1,204 deaths (a rate of 19.6) in 2020.^{xviii} Figure 42 reflects years of potential life lost (YPLL) due to opioid overdose.

Figure 42 - Years of potential life lost (YPLL) due to opioid overdose (2013 - 2018)

Source: Missouri Department of Health and Senior Services, and CDC, WONDER (2013-2018)

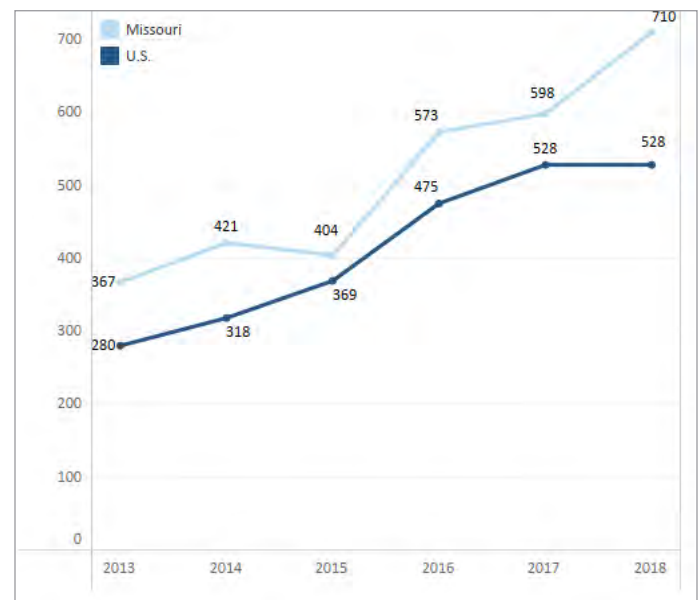
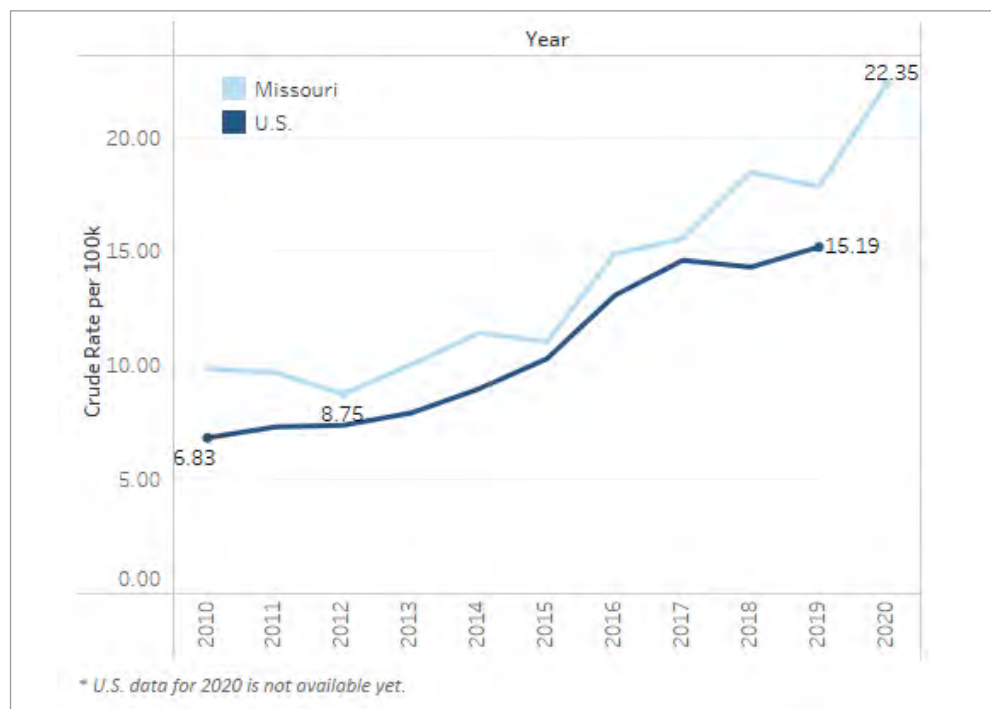


Figure 41 - Missouri drug overdose deaths involving any opioids per 100,000 resident population per year (age-adjusted) (2010-2020)

Source: U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality

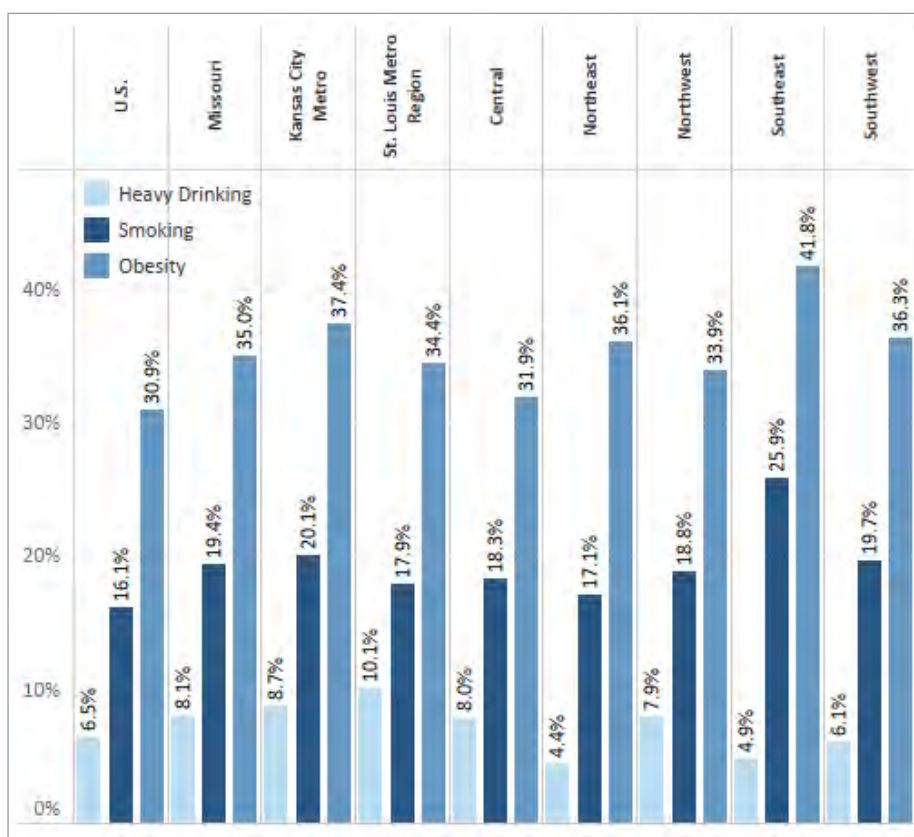


Chronic Diseases

Rates of heavy drinking, smoking and obesity for the state and regions, as compared to the U.S. as a whole, are shown in Figure 43.

Figure 43 - Health determinants for BRFSS Region, compared to U.S. and Missouri – 2018

Source: Department of Health and Senior Services and CDC, BRFSS, 2018



Smoking

Smoking rates by race/ethnicity, education status and income are shown in Figures 44, 45 and 46.

Figure 44 - Adult Smoking, by race/ethnicity. Percent of population age 18 and older that are current smokers – 2018

Source: Department of Health and Senior Services, and CDC, Behavioral Risk Factor Surveillance System, 2018

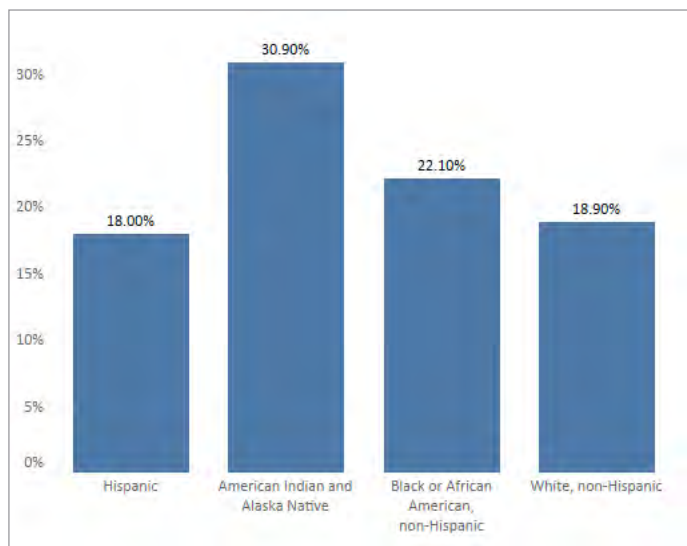


Figure 45- Adult smoking, by income. Percent of population age 18 and older that are currently smoking, 2018

Source: Center for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2018

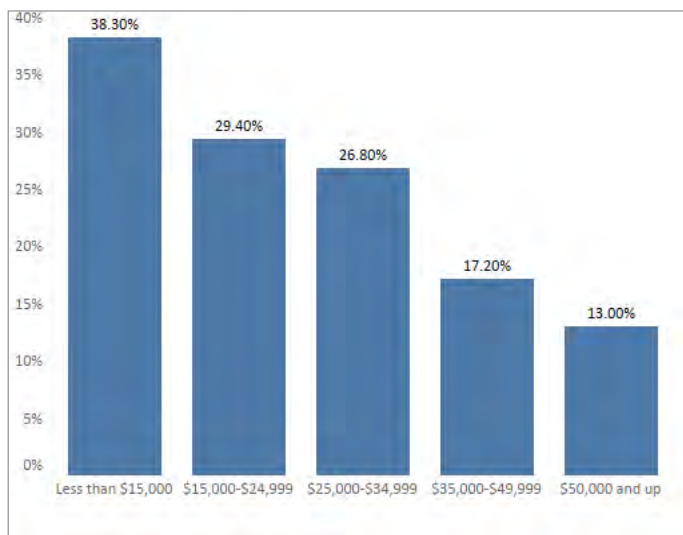
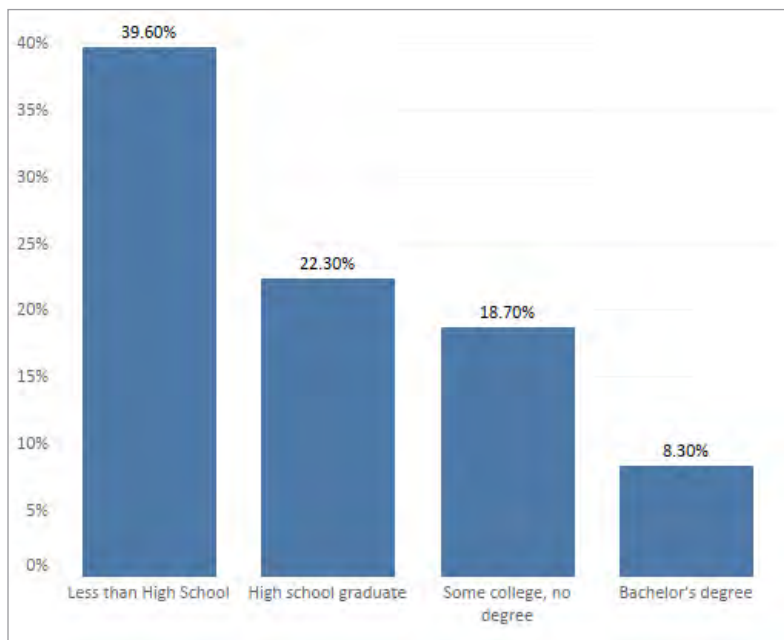


Figure 46- Adult smoking, by education status. Percent of population age 18 and older

Source: CDC, Behavioral Risk Factor Surveillance System, 2018



Obesity

Obesity is defined by measuring a person's Body Mass Index (BMI). The Centers for Disease Control and Prevention (CDC) states an adult with a BMI of 30 or higher (calculated using a person's height and weight) is considered obese. Childhood and adolescent obesity is also measured using BMI relative to the larger population. The National Health and Nutrition Examination Survey (NHANES) defines obesity in youth "as a BMI of greater than or equal to the age- and sex-specific 95th percentile of the 2000 Centers for Disease Control and Prevention growth charts". Children and adults who are obese are at a risk of acquiring chronic conditions such as high blood pressure, high cholesterol and Type 2 diabetes. These chronic conditions in turn elevate the risk for heart disease and diabetes, two of the leading causes of death in Missouri in 2018.

Adult Obesity

The prevalence of adult obesity in Missouri increased from 30.3% in 2011 to 35.0% in 2018, at a rate of increase higher than the national rate for the same time period (Figure 47). The prevalence of adult obesity in Southeast Missouri was the greatest in the state and United States (Figure 48). Equally, prevalence of adult obesity was highest among American Indian or Alaskan Native and Hispanics (Figure 49) as well as Missourians with household income less than \$50,000 (Figure 51) and among population with educational attainment less than college graduate (Figure 52).

Figure 48 - Percent of adults that report a BMI of 30 or more by regions, compared to U.S. and Missouri (2018)

Source: Missouri Department of Health and Senior Services CDC, Behavioral Risk Factor Surveillance System (2011-2018)

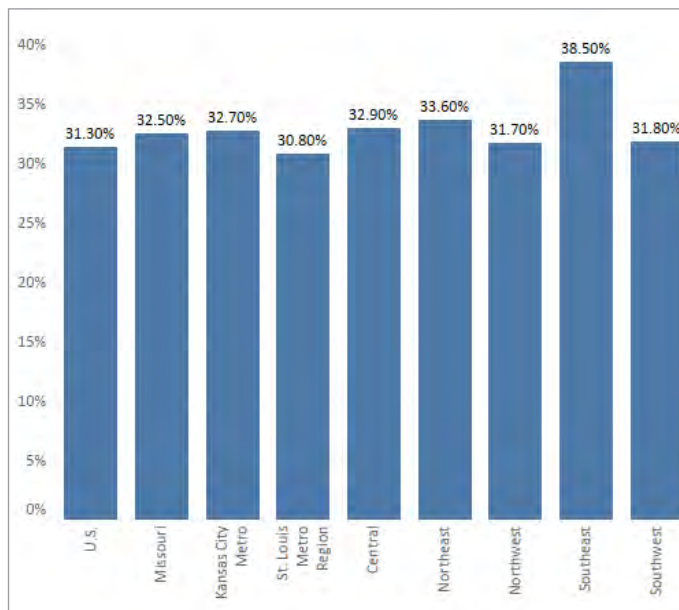


Figure 49- Missouri adult obesity by race/ethnicity. Percent of adults that report a BMI of 30 or more, 2018

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2018

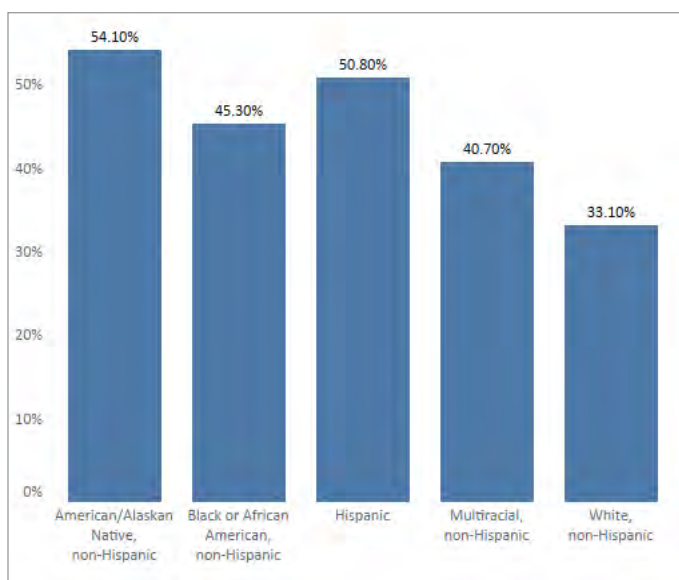


Figure 47- Percent of adults that report a BMI of 30 or more, compared to U.S. (2011-2018)

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance system (2011-2018)

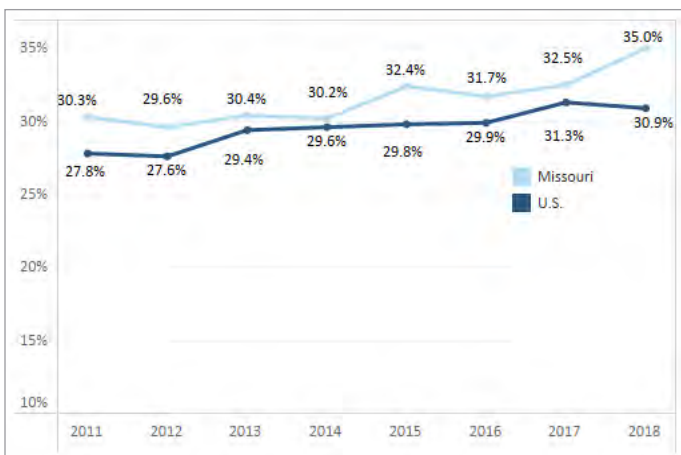


Figure 50- Missouri adult obesity, by age. Percent of adults that report a BMI of 30 or more, 2018

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2018

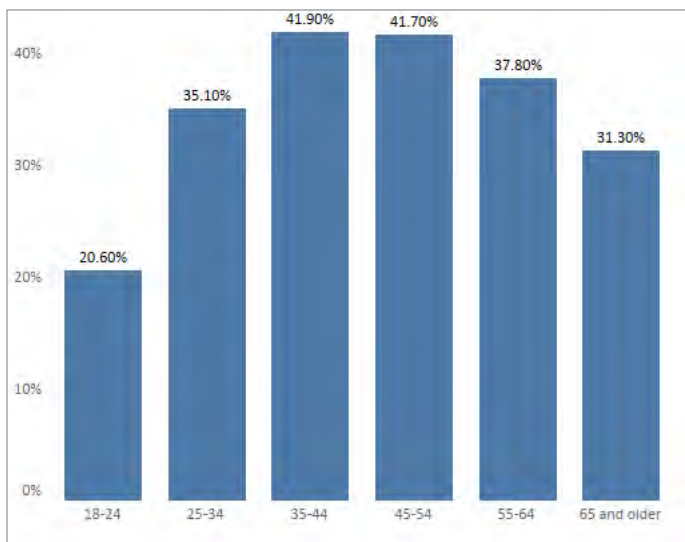


Figure 52- Missouri adult obesity by education. Percent of adults that report a BMI of 30 or more, 2018

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2018

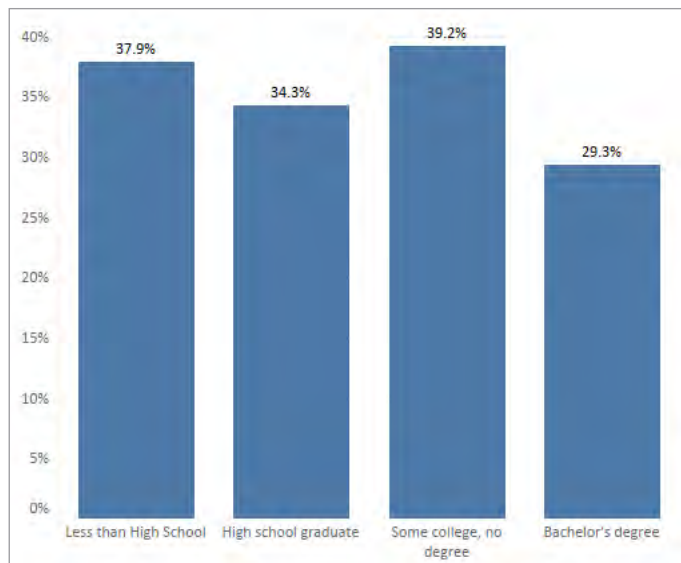
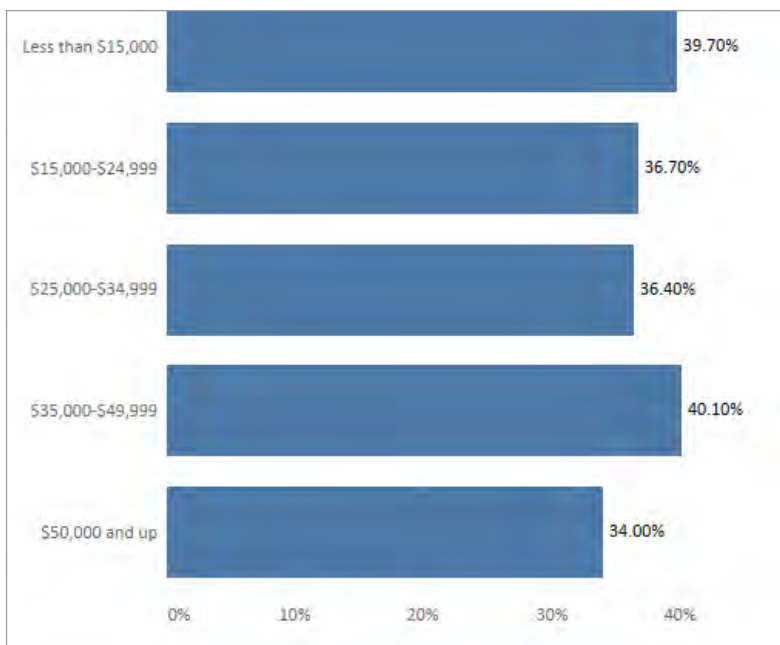


Figure 51- Missouri adult obesity, by income. Percent of adults that report a BMI of 30 or more, 2018

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, 2018



Youth Obesity

Like adult obesity, obesity in high school students increased significantly over the last ten years. It rose from 11.9% in 2007 to 16.6 % in 2017 (Figure 53). According to CDC State Youth Risk Behavior Surveys, in 2017 16.6% of students were obese. The obesity percentage was higher in males (18.9%) than females (14.4%) (Figure 54). Hispanic high school students had the highest percentage (24.1%) compared to Black or African American (17.6%) and white (15.6%) students. In the overall, Missourians youth obesity is higher than the U.S. rate.^{xix}

Figure 53- Percentage of Missouri middle and high school students who were obese 2007-2017

Source: Missouri Department of Health and Senior Services, 2017

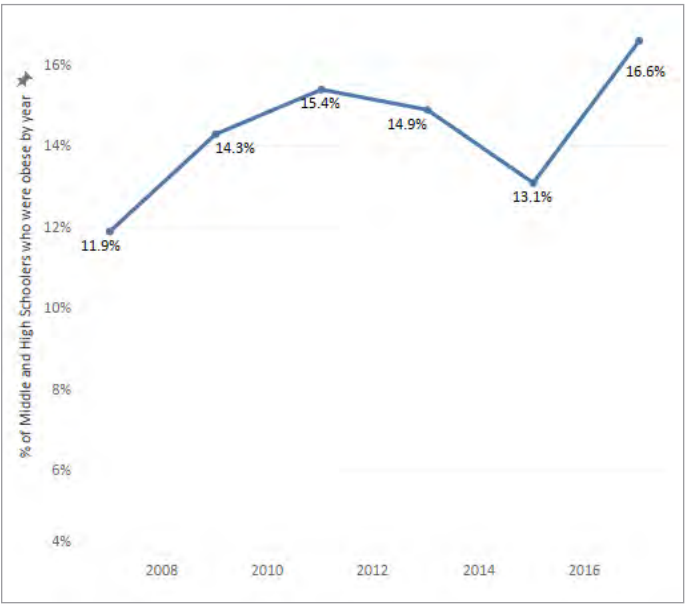


Figure 54- Missouri high school students who were obese, compared to United States, 2017

Source: CDC, State Youth Risk Behavior Surveys, 2017



Physical Inactivity

The 2018 National Survey of Children's Health Data Resource Center indicates that 10.2% of Missourians age 6-17 years reported not having any exercise, playing a sport, or participating in physical activity for at least 60 minutes during the past week (Table 4). Similarly, the CDC 2018 BRFSS reported that approximately 26.1% of Missouri adults had not had physical activity in the last 30 days. The BRFSS report also shows that the non-Hispanic American Indian/Alaskan Natives and non-Hispanic Blacks or African Americans are more likely to report having no physical activity compared to non-Hispanic whites and Hispanics (Table 5).



Table 4- Missouri children not engaging in vigorous physical activity by race/ethnicity, 2018

Source: Child and Adolescent Health Measurement Initiative, National Survey of Children's Health, Data Resource Center

| | |
|---|--------|
| Black or African American, non-Hispanic | 16.00% |
| Hispanic | 14.50% |
| Other, non-Hispanic | 18.80% |
| Overall | 10.20% |
| White, non-Hispanic | 7.90% |

Table 5- Missouri percent of all adults reporting no physical activity in the last 30 days* by race/ethnicity

Source: CDC, Behavioral Risk Factor Surveillance System (BRFSS), 2018

| | |
|---|--------|
| Black or African American, non-Hispanic | 33.80% |
| Hispanic | 29.10% |
| Multiracial, non-Hispanic | 34.70% |
| Overall | 26.10% |
| White, non-Hispanic | 24.90% |

Preventable Hospitalization and Emergency Room Visits

Preventable hospitalizations, also known as ambulatory care sensitive conditions, are those diagnoses for which timely and effective outpatient care can help to reduce the risks of hospitalization by either prevention of the onset of an illness or condition, controlling an acute episode, or managing a chronic disease or condition. DHSS maintains data from hospitals and ambulatory surgical centers throughout the state as well as data from emergency department visits. Preventable hospitalizations rates in Missouri have decreased since 2013 while emergency rates have been increasing (Tables 6 and 7). In addition, emergency department visits related to opioid use in Missouri have significantly increased since 2005 (Figure 55).

Figure 55- Emergency department visits related to opioid use in Missouri, compared to U.S. (age-adjusted, 2005 – 2016)

Source: AHRO, Nationwide Inpatient Sample and Nationwide Emergency Department Sample.

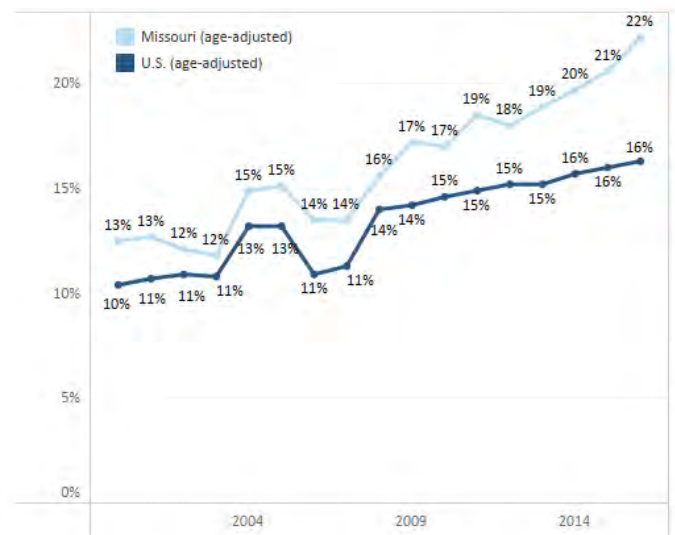


Table 6 - Missouri resident preventable hospitalizations by year and region

Source: Missouri Department of Health and Senior Services, 2017

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------------|--------|--------|--------|--------|--------|
| Central Region | 109.55 | 101.77 | 103.44 | 99.21 | 92.4 |
| Kansas City Metro | 136.54 | 144.44 | 141.96 | 128.19 | 122.89 |
| St. Louis Metro | 129.95 | 127.3 | 128.88 | 87.67 | 85.53 |
| Northeastern Region | 120.86 | 118.41 | 119.13 | 96.66 | 98.64 |
| Northwestern Region | 134.1 | 130.57 | 131.74 | 118.98 | 115.53 |
| Southeastern Region | 167.69 | 161.42 | 149.24 | 138.15 | 133.42 |
| Southwestern Region | 125.69 | 123.67 | 120.22 | 99.16 | 103.89 |
| Statewide | 131.53 | 130.13 | 128.84 | 105.23 | 102.82 |

Table 7 - Missouri resident emergency room visits by year and region

Source: CDC, Behavioral Risk Factor Surveillance System (BRFSS), 2018

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|---------------------|--------|--------|--------|--------|--------|
| Central Region | 365.9 | 388.76 | 411.04 | 418.91 | 410.53 |
| Kansas City Metro | 411.43 | 407.84 | 424.88 | 440.97 | 423.08 |
| St. Louis Metro | 336.52 | 325.32 | 343.83 | 359.87 | 373.51 |
| Northeastern Region | 343.8 | 356.59 | 372.9 | 376.49 | 371.15 |
| Northwestern Region | 331.12 | 351.47 | 390.18 | 391.08 | 373.08 |
| Southeastern Region | 453.95 | 474.06 | 488.84 | 466.97 | 470.77 |
| Southwestern Region | 422.67 | 390.46 | 392.13 | 377.15 | 361 |
| Statewide | 378.52 | 375.03 | 391.02 | 397.09 | 394.32 |

Behavioral Health

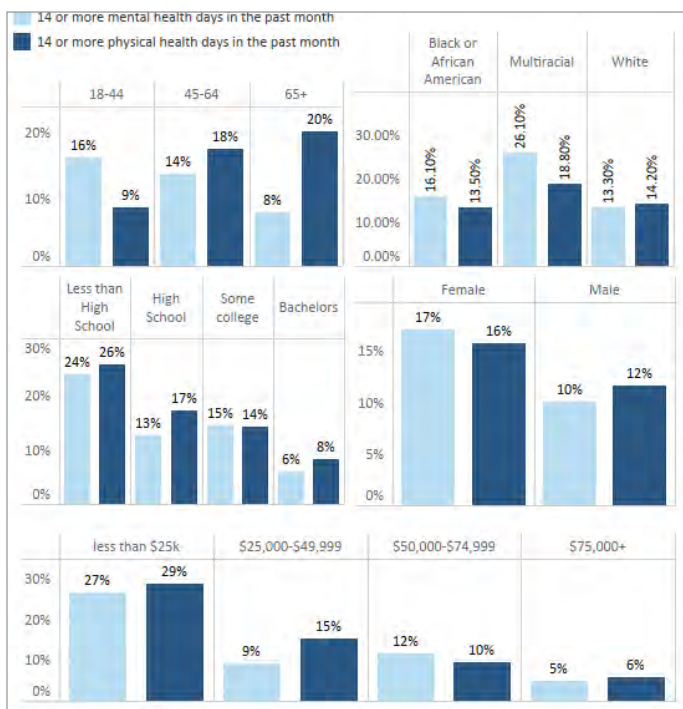
Behavioral health includes mental and emotional well-being, as well as the actions that influence overall wellness. The World Health Organization (WHO) constitution states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."^{xx} This section describes three main areas related to behavioral health including mental health, substance abuse and suicide.

Mental Health

Good mental health is more than just the absence of mental disorders or disabilities. It is an integral and essential component of overall health of an individual. Self-reports on adults experiencing 14 or more poor physical or mental health days in the past 30 days (age-adjusted) are reliable estimates on health-related quality of life (HRQOL). The questions ".....how many days during the past 30 days was your physical health not good?" and ".....how many days during the past 30 days was your mental health not good?" were asked in the 2017 Missouri BRFSS survey. The highest percentage of poor physical and mental health days occurred more frequently in women than in men, and more

Figure 56- Missouri percent of adults who report they are in poor physical or mental health - 2017

Source: America's Health Rankings analysis of CDC, BRFSS, United Health Foundation



frequently in persons with annual household income less than \$25,000, as well as adults with less than high school education. Young adult Missourians reported worse mental health versus those 65 years and older, while it's the opposite regarding physical health issues. Multiracial race reported higher poor physical and mental days relative to white and Black or African American race (Figure 56).

The National Survey on Drug Use and Health (NSDUH) 2017-2018 reporting period indicates that 21.0% of Missouri's adult age 18 and above (about 993,000 residents) had a mental illness in the past year, compared to 20.0% in the previous study. Serious mental illness (SMI) pertains to adults who have a diagnosable mental, behavioral or emotional disorder with serious impairment that substantially interferes with important life activities. In the reporting period 2017-2018, nearly 6.0% of Missouri citizens age 18 and over had serious mental illness in the past year.^{xxi} In addition, the highest increase was among young adults age 18 to 25 (Figure 57).

Figure 57- Missouri Residents with Serious Mental Illness in the Past Year (by age), 2018

Source: U.S. Department of Health and Human Services, SAMHSA, Center for Behavioral Health Statistics and Quality



Depression

A major depressive episode (MDE)^{xxii} specifies a period of at least 2 weeks when an individual experienced a depressed mood or loss of interest or pleasure in daily activities and had a majority of specified depression symptoms^{xxiii}. According to the 2017 and 2018 Substance Abuse and Mental Health Services Administration (SAMHSA) report, an estimated 489,000 Missouri residents had a MDE episode. They include 69,000 adolescents (12 to 17 years), 85,000 young adults (18-25 years) and 335,000 adults older than 65 years. Between 2012 and 2017 the rate of MDE episodes in adolescents (12-17 years) increased faster than young and older adults (Figure 58).

In the 2017 Missouri BRFSS, more than 22.0% Missourians reported experiencing a form of depressive disorder under the question “Has a doctor, nurse or other health professional ever said that you have a depressive disorder, including depression, major depression, dysthymia, or minor depression?”. The Southeast Missouri region had the highest prevalence of frequent poor mental health (14 or more of past 30 days) as well as having depressive disorder (Figure 59-60).

Figure 58- Missouri Residents Major Depressive Episode in the Past Year, 2017-2018

Source: U.S. Department of Health and Human Services, SAMHSA, Center for Behavioral Health Statistics and Quality

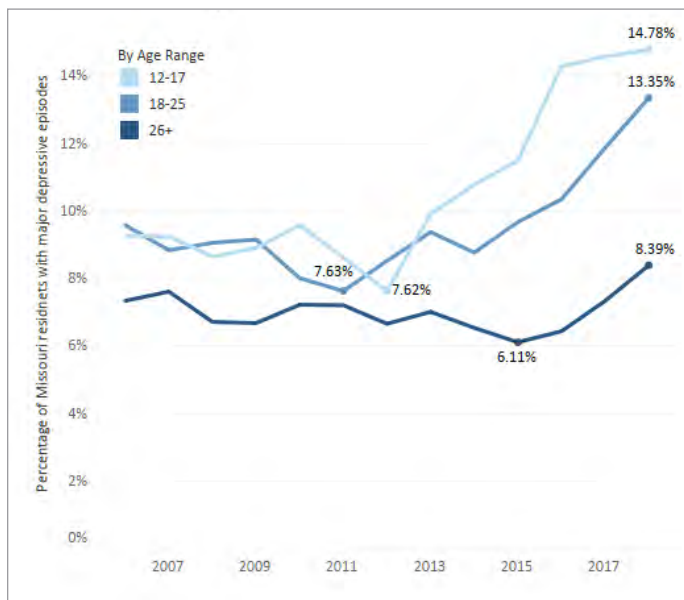


Figure 59- Prevalence of frequent poor mental health (14 or more of past 30 days) by regions in Missouri, 2017

Source: Missouri Department of Health and Senior Services and CDC, BRFSS, 2017

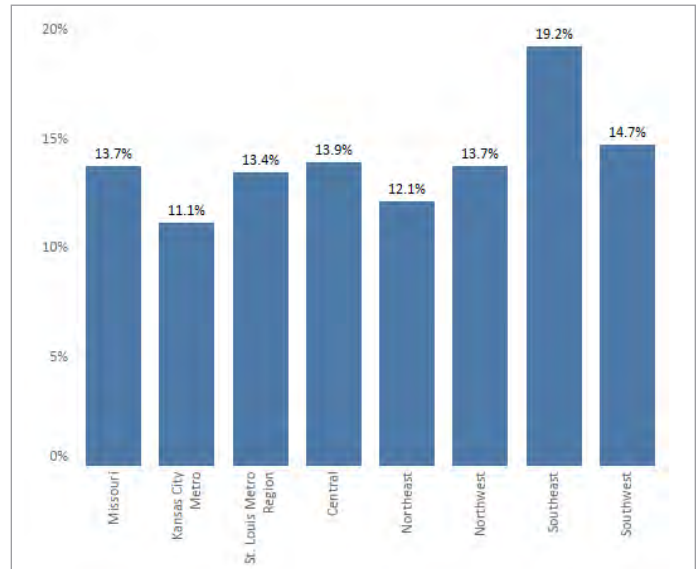
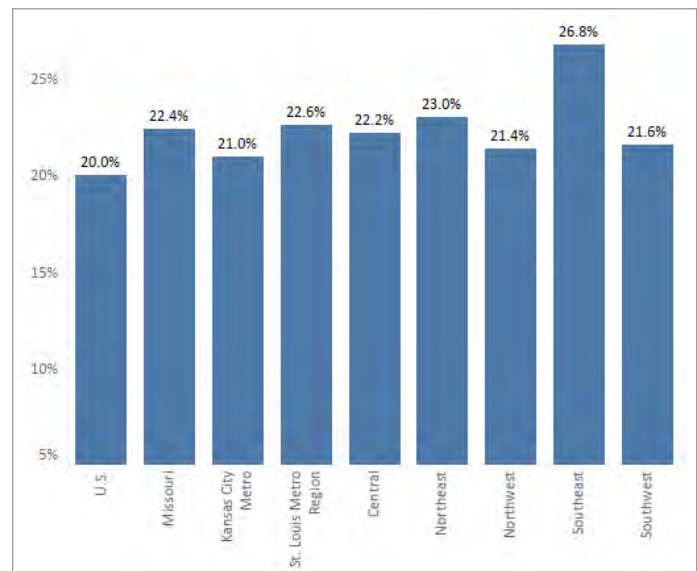


Figure 60- Prevalence of ever having depressive disorder by regions, compared to U.S. and in overall Missouri, 2017

Source: Missouri Department of Health and Senior Services and CDC, BRFSS, 2017



Substance Use Disorders

Substance use disorders (SUD) occur when recurrent use of alcohol and/or drugs causes clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school or home. In the 2017-2018 two year reporting period, the NSDUH estimates that approximately 7.2% of Missouri’s population 12 years and older (368,000) had a past-year SUD disorder, about 5.02% (256,000) had alcohol use disorders, approximately 2.6% (133,000) had a past year disorder related to illicit drug use disorders, and 0.7% (36,000) had disorders resulting from pain reliever use.^{xxiv}

Suicide

According to 2010-2018 data from DHSS, the Missouri age-adjusted suicide rate increased by 39.3% from 14.0 per 100,000 standard population in 2010 to 19.5 per 100,000 in 2018. Although the overall Missouri suicide rate in 2018 was highest among males age 65 and older, the male suicide rate in the Northeast and Southeast regions was highest among 15 to 24 years and it was highest among 65 years and older in Southwest region (Figure 61). Also, according to the NSDUH report for 2017 and 2018, approximately 219,000 Missouri adults (18 years and older) had serious suicidal thoughts in the past year and primarily among adults age 18-25 years (Figure 62).

Figure 62- Missouri Residents with thoughts of suicide in the Past Year

Source: U.S. Department of Health and Human Services, SAMHSA, Center for Behavioral Health Statistics and Quality

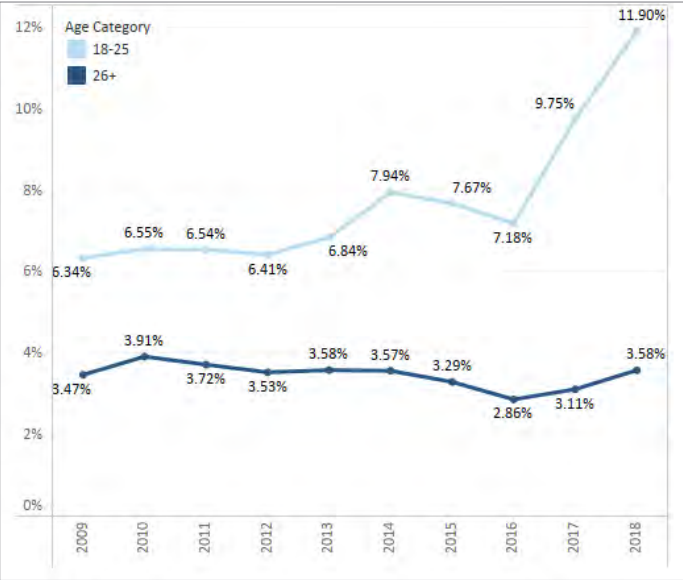
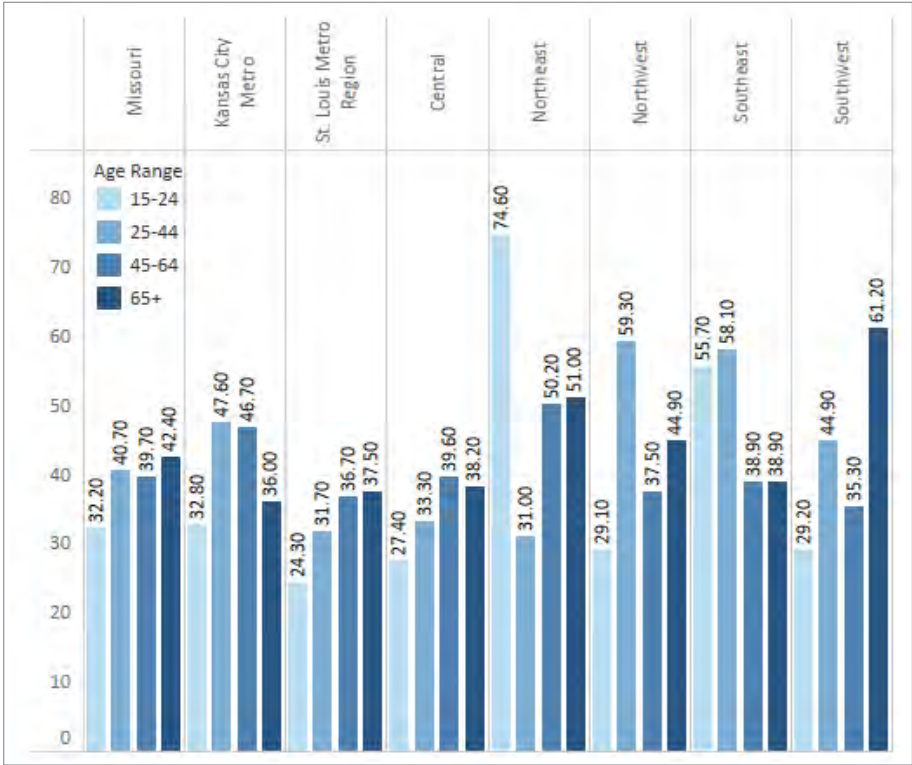


Figure 61- Male suicide death rate by Region and age, compared to Missouri (2018, age-adjusted)

Source: Missouri Department of Health and Senior Services



Maternal and Infant Health

The well-being of mothers, infants and children determines the health of the next generation and can help predict future public health challenges for families, communities and the medical care system.^{xxv} Poor maternal health is associated with adverse child health outcomes with effects on neonatal survival, birth weight, cognitive development, child behavior, school performance and adult health and productivity.^{xxvi, xxvii} In addition to increasing the infant's risk of death in its first few days of life, preterm birth and low birth weight can lead to devastating and lifelong disabilities for the child. Primary among these are visual and hearing impairments, developmental delays and behavioral and emotional problems that range from mild to severe.

Infant Health

Infant mortality refers to the death of an infant before the first birthday. The infant mortality rate is calculated as the number of infant deaths for every 1,000 live births. Infant mortality rates are often used as an indicator of the health of a nation, state or community because factors affecting the health of the entire population may impact the mortality rate of infants. The 2018 Missouri infant mortality rate (6.3 per 1,000 live births) was significantly higher than the U.S. rate (5.7 per 1,000 births), with the St. Louis Metro region having the highest mortality rate (6.7 per 1,000 births) (Figure 63).

Although Missouri achieved a 13.0% infant mortality decrease from 2008 to 2018 (7.2% to 6.3%), racial disparities persist. In 2018, the infant mortality rate for Black or African American non-Hispanics was approximately two times higher than white non-Hispanics (Figure 64).

Figure 63- Infant mortality rates for regions, compared to U.S. and all Missourians (Infant deaths per 1,000 births), 2018

Source: Missouri Department of Health and Senior Services and CDC National Statistics. 2018

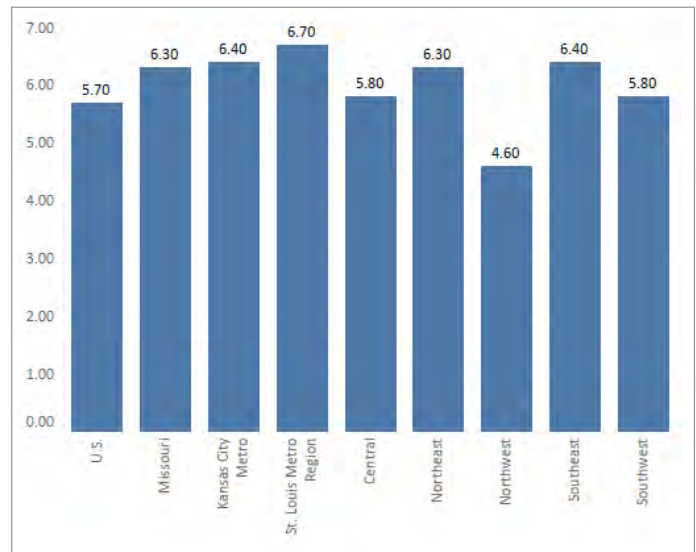
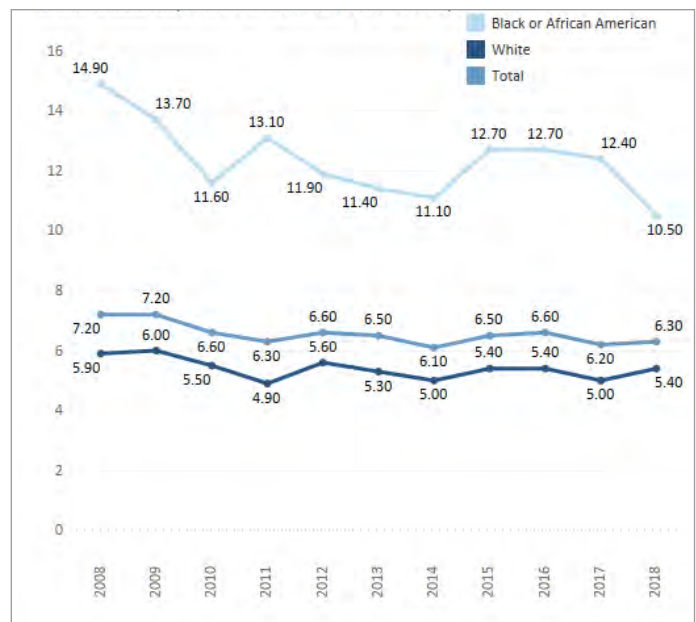


Figure 64- Infant mortality rate by Race, Missouri, 2018 (per 1,000 live births)

Source: Missouri Department of Health and Senior Services, 2008-2018



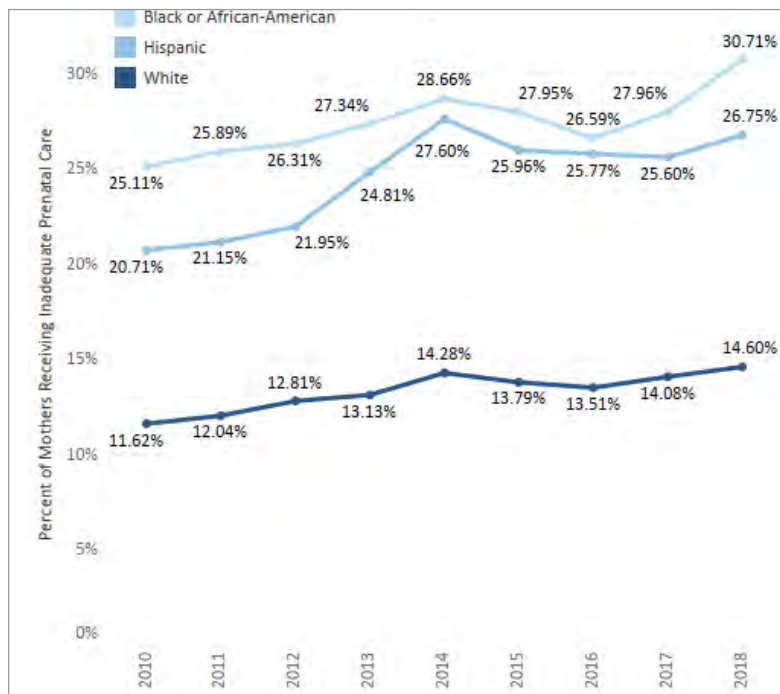
Prenatal Care

Prenatal care (PNC) has been viewed as a strategy to improve pregnancy outcomes for more than a century. PNC is currently one of the most frequently employed preventive health care services in the U.S.^{xxviii,xxix} Mothers who do not have adequate prenatal care are more likely to give birth to babies with low birth weight (less than 2,500 grams) or experience infant death. The trend of the percentage of women who do not receive adequate prenatal care was highest among Black African Americans and Hispanics (Figure 65). Early and adequate prenatal care is important to ensure mother and infant are healthy throughout pregnancy and birth. About 71.4% of Missouri mothers who gave birth in 2018 initiated prenatal care in the first trimester, a number lower than the Healthy People 2020 target of 84.8%. In the same year, about 56.2% of Black or African American non-Hispanic Missouri mothers initiated prenatal care in the first semester compared to 75.0% of white non-Hispanic mothers.^{xxx}



Figure 65- Trends in Inadequacy of Prenatal Care, by Race/Ethnicity, Missouri, 2010-2018

Source: Department of Health and Senior Services 2010-2018



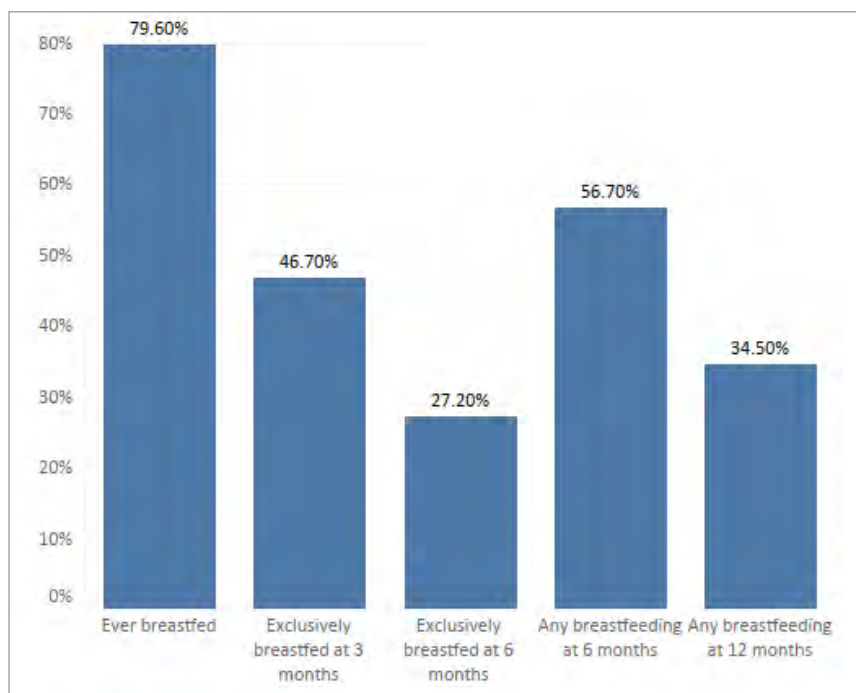
Breastfeeding

Breastfeeding is the best source of nutrition for most infants. It can reduce the risk for certain short- and long-term health conditions for both infants and mothers and therefore is considered a public health issue. The American Academy of Pediatrics (AAP) recommends that infants be exclusively breastfed for about the first six months with continued breastfeeding and the introduction of appropriate complementary foods for one year or longer.^{xxxix} In 2016, Missouri did not meet the Healthy People 2020 target for proportion of children who are breastfed (81.9%), but the state met the target for exclusive breastfeeding at three months (46.7%), exclusive breastfeeding at six months (27.2%), and any breastfeeding at 12 months (34.5%) (Figure 66)ⁱ.



Figure 66- Breastfeeding among Missouri participants born in 2016

Source: National Immunization Surveys, 2016



ⁱ[1] Ever breastfeeding is defined by the question “was [child] ever breastfed or fed breast milk?”, Exclusive breastfeeding is defined as ONLY breast milk - No solids, no water, and no other liquids, and Breastfed at 6 months and at 12 is defined as breastfeeding to any extent with or without the addition of complementary liquids or solids.

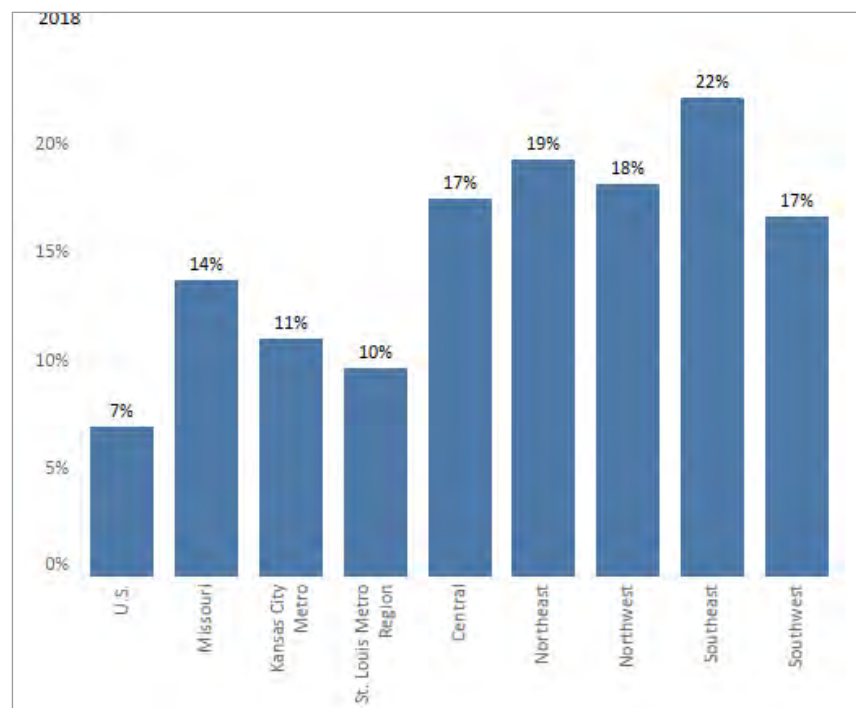
Tobacco Use During Pregnancy

Smoking cigarettes and using other tobacco products while pregnant increases the risk of health problems for developing babies, including pre-term birth, low birth weight, birth defects and risk of sudden infant death syndrome (SIDS). Missouri has one of the highest rates of maternal tobacco use in the country. In the 2019 American's Health Ranking Report, Missouri ranked 46th (14.0%) for tobacco use while pregnant, with the Southeast region having the highest rate (22.0%) of maternal smokers (Figure 67).



Figure 67- Percentage of mothers who smoked during pregnancy for regions, Compared to U.S. and all Missourians

Source: Missouri Department of Health and Senior Services and CDC National Vital Statistics, 2018



Maternal Mortality

Maternal mortality is a critical public health issue and like infant death, it is an often-used indicator of health care quality in the United States. The National Center for Health Statistics (NCHS) uses the WHO definition for maternal mortality: “deaths of women while pregnant or within 42 days of being pregnant, from any cause related to or aggravated by the pregnancy or its management”.^{xxxii} However, the CDC Pregnancy Mortality Surveillance System (PMSS) defines pregnancy-related deaths as the death of a woman while pregnant or within 1 year of the end of a pregnancy – regardless of the outcome, duration or site of the pregnancy – from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes^{xxxiii}. Using the PMSS definition, the 2019 American’s Health Ranking Report shows that the Missouri maternal mortality rate over the last five years (2013-2017) was approximately 40.7 deaths per 100,000 live births, a rate significantly higher than the nation’s rate of 29.6 deaths per 100,000 live births. Missouri African American mothers are about 3 times more likely to perish from pregnancy-related causes than white mothers (Figure 68) and women age 35-44 are twice more likely to die than those 15-24 years (Figure 69).



Figure 68- Missouri number of deaths from any cause related to or aggravated by pregnancy or its management by race, compared to U.S.

Source: America’s Health Rankings analysis of CDC WONDER Online Database, (2013-2017)

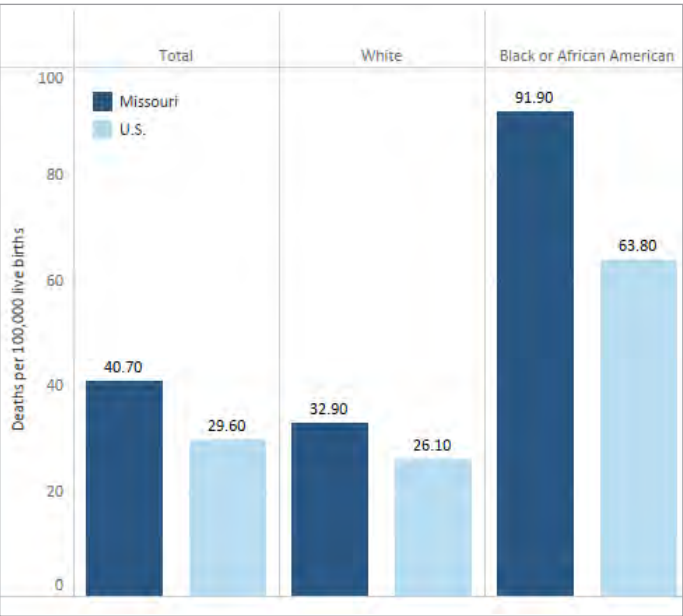
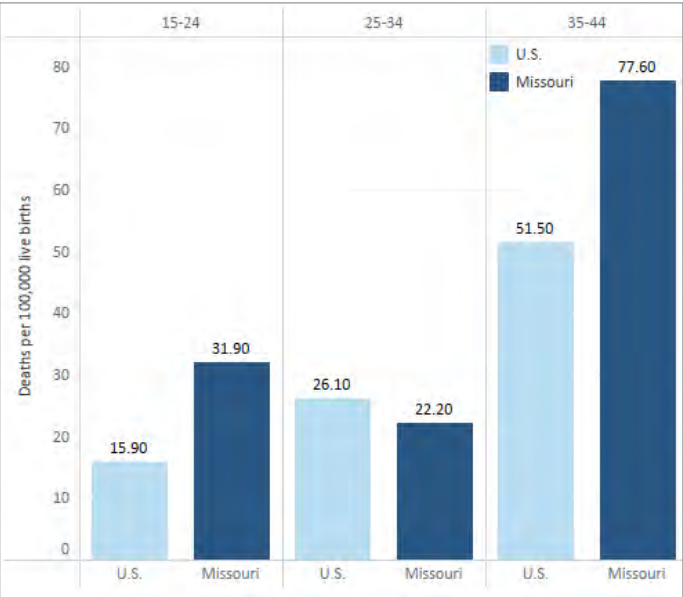


Figure 69- Missouri number of deaths from any cause related to or aggravated by pregnancy or its management by age, compared to U.S.

Source: America’s Health Rankings analysis of CDC WONDER Online Database, (2013-2017)



¹Ever breastfeeding is defined by the question "was [child] ever breastfed or fed breast milk?", Exclusive breastfeeding is defined as ONLY breast milk - No solids, no water, and no other liquids, and Breastfed at 6 months and at 12 is defined as breastfeeding to any extent with or without the addition of complementary liquids or solids.

Oral Health

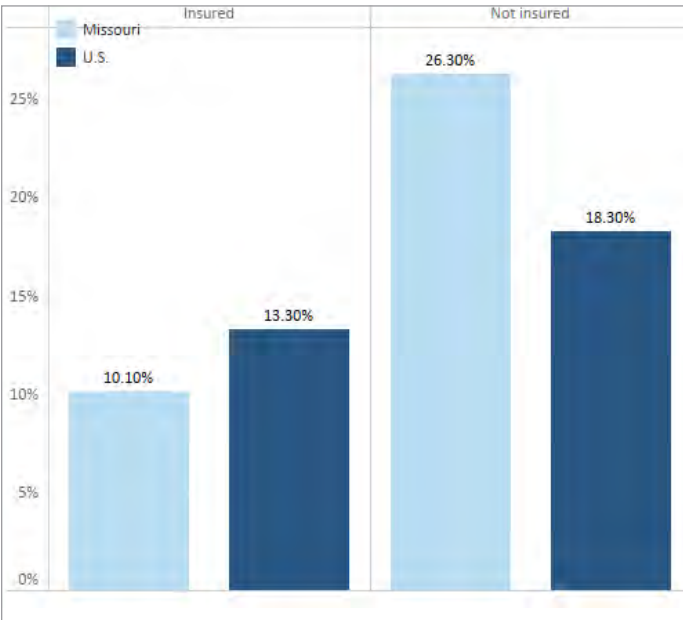
Oral health is essential for general health and well-being. Oral health influences our ability to eat, speak, smile and show emotions as well as affects a person’s self-esteem, school performance and attendance at work or school. The National Inter-professional Initiative on Oral Health reports that dental caries (tooth decay or cavities) is the most common chronic disease of childhood.^{xxxiv} Good oral health involves regular dental visits, which are important because some diseases or medical conditions have symptoms that can appear in the mouth.

Children

In the 2016-2017 National Survey of Children’s Health (NSCH)^{xxxv}, about 11.2% of children age 1 through 17 years in Missouri reported they had decayed teeth or cavities in the past year compared to 11.7% at the national level. Health insurance and household income are the two important determinants of access to dental or oral health care. Of the number of children who reported having decayed teeth or cavities in the past year, 26.3% were not insured while 10.1% were insured (Figure 70).

Figure 70- Percent of children who have decayed teeth or cavities in the past year.

Source: National Survey of Children’s Health, Health Resources and Services Administration, Maternal and Child Health Bureau – 2016-2017



Adult

According to the 2018 BRFSS report, about 63.3% of Missouri adult respondents indicated they had visited the dentist or a dental clinic in the past year, compared to 58.6% in 2014. Certain demographic categories had the highest rate of dental visit in the past year, including females, adults age group 18 to 24, Asian, non-Hispanic, college degree and higher, and families with household income of \$50,000 or more. Hispanic and multiracial are more likely not to visit the dentist or dental clinic within the past year for any reason^{xxxvi}.



Infectious Diseases

Infectious diseases remain a major cause of illness, disability and death. This section provides information on preventing and controlling infectious diseases including but not limited to the following infectious disease areas: Immunization, Foodborne Diseases, Sexually Transmitted Infections and Human Immunodeficiency Virus (HIV).

Immunization Coverage

Immunizations are important in the prevention and control of communicable diseases. Early childhood immunization is a safe and effective way of protecting infants and children from vaccine-preventable diseases or severe illness and death and they help protect the greater community from disease outbreaks. The percent of Missouri children receiving the recommended dosage differ by vaccine. According to the 2017 National Immunization Survey (NIS-Child), Missouri's coverage for vaccines among children ages 19 to 35 months was 77.0% for vaccination with ≥ 4 doses of diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP), 89.3% for ≥ 3 doses of poliovirus vaccine, 85.9% for ≥ 1 dose of measles, mumps and rubella (MMR), 80.4% for

≥ 3 doses of the full series of Haemophilus influenzae type b conjugate vaccine (Hib), 89.0% for ≥ 3 dose HepB, 86.0% for ≥ 1 dose of varicella vaccine, and 89.4% for ≥ 3 doses pneumococcal conjugate vaccine (PCV). Missouri vaccination coverage on all vaccines is lower (80%) than national coverage (81%) and the Healthy People 2020 target of 90.0% (Figure 71). Though there are disparities for vaccination coverage differences by race/ethnicity and children living inside or outside metropolitan statistical areas, significant differences were observed between Missourians living below the federal poverty level and those living at or above the poverty level (Figure 72).

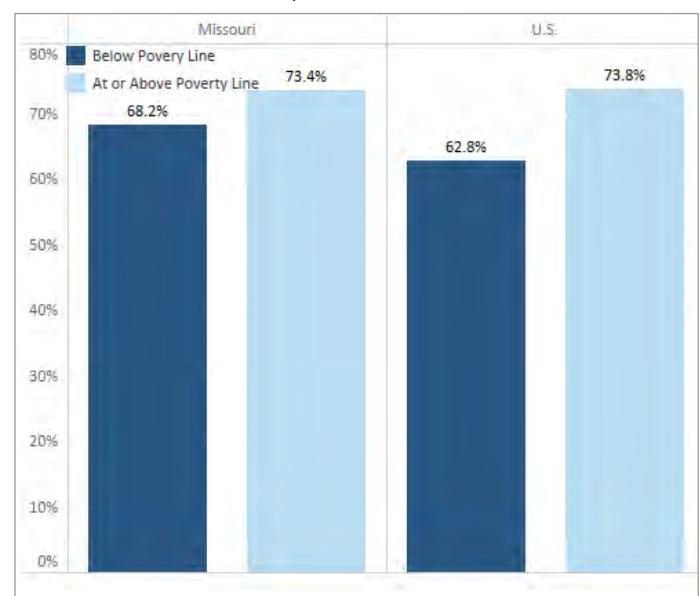
Figure 71- Immunization status among children aged 19 to 35 months in Missouri, compared to the U.S., 2017

Source: Centers for Disease Control and Prevention. Archived Interactive Reports by Survey Year (1995-2017)



Figure 72- Difference on immunization coverage among children aged 19 to 35 months by poverty status in Missouri and the U.S.

Source: America's Health Rankings analysis of CDC NIS-Child, United Health Foundation Immunization Survey, 2017



Foodborne Disease

Foodborne illnesses are common, costly and preventable public health hazards. People get foodborne illnesses (also known as food poisoning) by eating contaminated food. Food can become contaminated with different disease-causing germs (such as bacteria, viruses and parasites), chemicals and other agents, hence there are many different foodborne infections. The CDC estimates each year roughly 48 million people (1 in 6) gets sick from a foodborne illness, 128,000 are hospitalized and 3,000 die each year in the United States.^{xxxvii}

In 2018, 4,538 foodborne disease outbreaks were reported in Missouri, resulting in 1,096 hospitalizations, and 12 deaths. Campylobacteriosis was the most cause of reported illness, accounting for 1,448 (23.64 rate per 100,000) and 1,318 (21.51 rate per 100,000) for Salmonellosis was next, followed by Cryptosporidiosis accounting for 351 (5.73 rate per 100,000) and Shigellosis accounting for 309 (5.04 rate per 100,000).^{xxxviii} The Missouri DHSS and Local Public Health Agencies investigate all foodborne disease outbreaks and track the number of illnesses, hospitalizations and deaths; the pathogens, toxins and chemical agents that caused illnesses, the implicated food and factors contributing to food contamination.



Sexually Transmitted Infections (STI)

The CDC estimates there are approximately 20 million new sexually transmitted diseases (STD) infections each year, almost half of them among young people ages 15 to 24.^{xxix} The STDs increased significantly in United States in 2018. There were 1.8 million cases of chlamydia (19% rate increase since 2014), 583,405 cases of gonorrhea (63.0% rate increase of since 2014), 115,045 cases of syphilis (71.0% rate increase of infectious syphilis since 2014), and 1,306 cases of syphilis among newborns (185.0% rate increase since 2014).^{xl} The following sections discusses Missouri reported cases, for the three reportable sexually transmitted diseases.

Chlamydia

Chlamydia is an infection caused by the bacterium *Chlamydia trachomatis* and is the most frequently reported infectious disease in the United States. While most infections are treatable with any of several antibiotics, complications such as pelvic inflammatory disease (PID), ectopic pregnancy, and infertility can particularly affect women. In 2018 Missouri ranked 18th in Chlamydia infections. There were 34,728 (568.1 per 100,000 population) reported cases compared to the national rate of 539 per 100,000 population.^{xli} The rate of chlamydia was highest on average among females compared to males (Figure 73).

Figure 73- Chlamydia — Rates per 100,000 of reported cases in Missouri (by sex)

Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB, 2014-2018

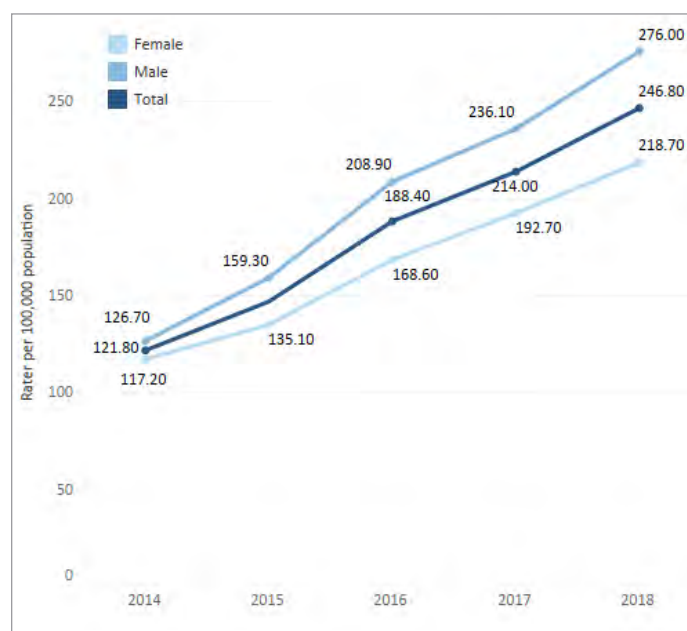


Gonorrhea

Gonorrhea is caused by the bacterium *Neisseria gonorrhoeae*. If left untreated in women, gonorrhea can cause PID and other serious reproductive complications, including infertility, ectopic pregnancy and chronic pelvic pain. The bacteria that cause this infection has progressively developed resistance to antimicrobials used for its treatment. The rate of gonorrhea cases in Missouri has been increasing since 2014 (Figure 74). Missouri ranked seven on gonorrhea reported cases in 2018, with 15,090 cases at the rate of 246.8 per 100,000 population. Unlike chlamydia, the highest rate of increase was among Missouri males.

Figure 74- Gonorrhea — reported cases and rates in Missouri, 2014–2018 (rates per 100,000 population)

Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB, 2014-2018



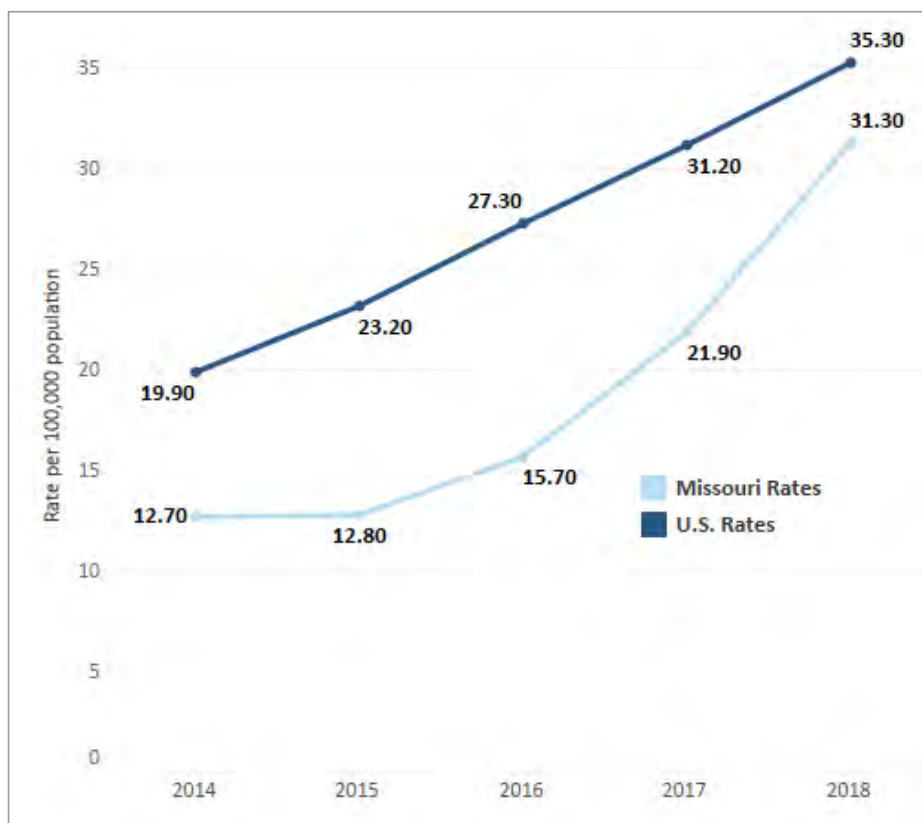
Syphilis

Syphilis is a STI caused by the bacterium *Treponema pallidum*. Syphilis infection progresses through stages: primary, secondary, latent and late. If left undiagnosed and untreated, syphilis can cause complications including permanent visual impairment, hearing loss and other neurologic problems and it can facilitate the transmission and acquisition of HIV infection.^{xlii} Syphilis has re-emerged as a significant public health problem both in Missouri and nationally. The infection increased from 12.7 rate per 100,000 population in 2014 to 31.3 rate per 100,000 Missourians in 2018 (Figure 75).



Figure 75- Syphilis — reported cases and rates in Missouri, 2014–2018

Source: Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD and TB, 2014-2018



HIV/AIDS

Human immunodeficiency virus (HIV) is a virus that attacks cells (specifically the CD4 cells, often called T cells) that help the body fight infection, making a person more vulnerable to other infections and diseases. No effective cure currently exists, but with proper medical care, HIV can oftentimes be controlled. If left untreated, HIV can lead to the disease AIDS (acquired immunodeficiency syndrome). According to the CDC 2018 BRFSS report, 34.1% adult Missourians reported having ever been tested for HIV. Female adults, Black or African Americans and ages 35-44 are more likely to be tested for HIV. Approximately 240 per 100,000 adult Missourians were living with HIV, with the highest rate among males and Blacks or African Americans (See Figures 76 and 77).^{xliii} In addition, the 2009-2018 Missouri trend on HIV/AIDS deaths are significantly high among Black or African Americans compared to whites (Figure 78).^{xliv}

Figure 77- Adults and Adolescents living with an HIV diagnosis, by race/ethnicity

Source: Kaiser Family Foundation, 2018

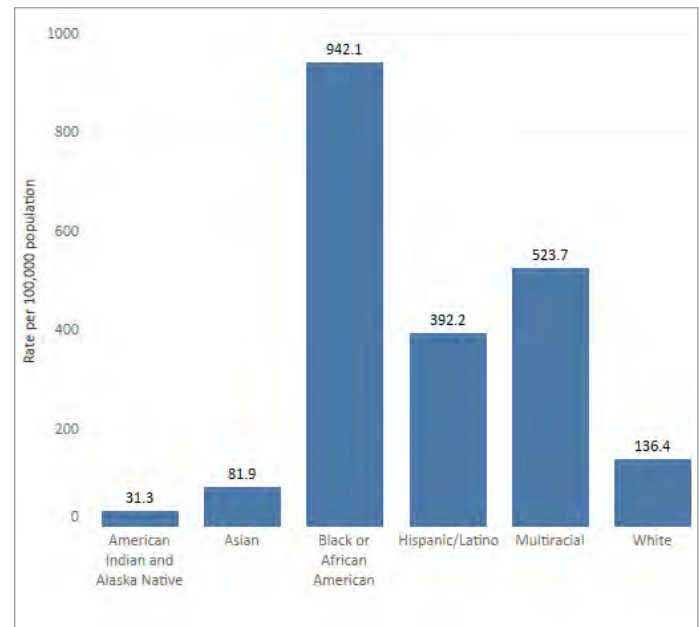


Figure 76- Missourian adults and adolescents living with an HIV diagnosis, by sex, rates are per 100,000 population

Source: Kaiser Family Foundation, 2018

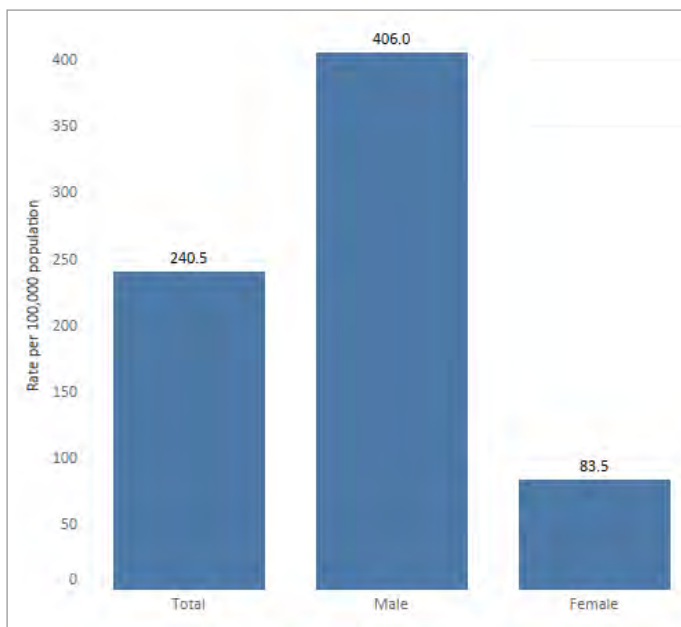
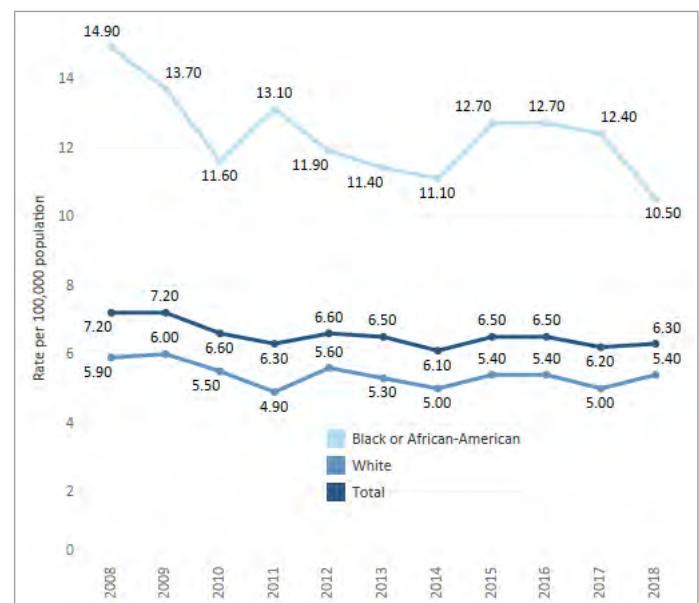


Figure 78- Missouri HIV/AIDS death related by race, 2009-2018

Source: Missouri Department of Health and Senior Services, age-adjusted, 2008-2018



STATE PUBLIC HEALTH SYSTEM ASSESSMENT

Background

The state public health system assessment is a process to review the way in which the Missouri public health system comes together to perform the 10 Essential Public Health Services (EPHS). This system includes more than just the state and local public health agencies; it is made up of nonprofits, academic institutions, other state agencies, and any entity that engages in health.

To complete the assessment, the Missouri Department of Health and Senior Services (DHSS) created their own assessment tool and enacted it at a two-day in-person meeting in February 2020. Participants were requested to conduct an analysis to list their organizations' Strengths, Weaknesses, Opportunities and Threats (SWOT). These responses were then linked to the EPHS. Roughly 600 comments were collected. The data was qualitatively coded to group similar comments identifying prevailing

themes through the various categories of the SWOT analysis. The same comments were then coded into the appropriate EPHS category, which were compared to the EPHS coding which the participants had self-identified. This created a number of data tables that allowed the evaluation team to identify both information around the system's capacity to fulfill the EPHS and provide information to use in addressing issues identified in the Forces of Change Assessment. Refer to the Forces of Change Assessment section for additional information.

The prevailing themes, as well as specific associated comments, can be seen by category (Strength, Weakness, Opportunity and Threat) in the tables on the following page.

Also, included is a chart that shows the same categories with the comments mapped to the 10 EPHS and a summary of key findings.

The 10 Essential Public Health Services

Source: Centers for Disease Control and Prevention <https://www.cdc.gov/publichealthgateway/publichealthservices/originalessentialhealthservices.html>



To complete the assessment, the Missouri Department of Health and Senior Services (DHSS) created their own assessment tool.



* Rank represents the # of comments collected, only the highest ranked appear on the tables below.

Strengths

| Theme | Rank* |
|-------------------------------------|-------|
| Existing Staff | 45 |
| Data Analysis & Collection | 24 |
| Resources (Financial/Non-Financial) | 23 |
| Governance& Leadership | 22 |

Key Comments

“All staff & board are highly invested in the county”

“Caring, committed staff”

“Tenured staff with vast experience”

“Expertise with data analysis and research”

“Solid Fiscal Structure”

Weaknesses

| Theme | Rank* |
|-------------------------------------|-------|
| Existing Staff | 35 |
| Resources (Financial/Non-Financial) | 25 |
| Organizational Focus & Functions | 24 |

Key Comments

“Staff burnout/turnover”

“Large waves of retirements expected”

“Workload of faculty and staff”

“Medicaid long-term care facilities are underfunded and short staffed”

“Diminishing general revenue from the city”

Opportunities

| Theme | Rank* |
|--|-------|
| Governmental Collaboration & Influence | 27 |
| Resources (Financial/Non-Financial) | 18 |
| Community Integration | 16 |
| Governance& Leadership | 22 |

Key Comments

“Partnership with state departments”

“Connections to advocates and policymakers”

“Strong commitment from state government”

“Looking for outside funding resources”

“Foundational partnerships”

Threats

| Theme | Rank* |
|--|-------|
| Resources (Financial/Non-Financial) | 45 |
| Community Integration | 24 |
| Governmental Collaboration & Influence | 23 |
| Governance& Leadership | 22 |

Key Comments

“Diminished funding from all sources”

“Not a lot of state and federal dollars available to close the funding gap”

“Low tax support for public health (local, state, federal)”

“Some in community are suspicious of any governmental agency ‘Don’t tell me what to do’”

“Very scary political climate for us”

Summary of Qualitative Coding

The highest rated strength is the system's existing staff. Many comments in this category reference the specialized skills and institutional knowledge contained within participant organizations. Many of the participants specifically listed their organization's skill and access to data collection and analysis (second most common comment category). The third highest listed strength was Resources (Financial/Non-Financial).

Conversely, the highest listed weakness was also reported as existing staff. The contradiction may be attributed to the methodology of coding. Specifically, the coding team used the same code for any comments that dealt with the status, skills and staffing level of the organization. Many comments regarding weaknesses of the organizations were about turnover, the required workload, the lack of ability to provide competitive benefits, concerns about staffing levels in the future and the threat of losing institutional knowledge. Comments regarding organizational focus and functions also tie to the workload and difficulties of competing priorities of day-to-day operations. Unsurprisingly, funding was the second most frequent weakness listed across all organizations.

The system also addressed resources within the threats and opportunities section of the comments. It was the most common listed threat and the second most listed opportunity. In all cases, the focus was on the funding streams for the Missouri health system and how those streams would change. The most frequently named opportunity concerned collaboration and the ability for the system to increase their capabilities by working together.

Overall, this generally shows the workforce of the Missouri health system is talented and caring, but the workforce is under consistent stress. Additionally, there are concerns about the system's ability to retain the current workforce and what will happen as the institutional knowledge of the organizations decrease due to retirements. The system as a whole needs additional funding and the threats to that funding stream only intensify the stress put on the workforce. Lastly, there is a recognition that collaboration is needed to reach collective impact.

The overall takeaway from the coding of stakeholder comments to their associated EPHS is the people who make up the day-to-day workforce are the greatest strength to help keep Missourians healthy and safe. The potential to lose that workforce, whether due to pay/benefits, or as the population of current workers ages out, is our greatest weakness.

Collaboration is both the highest rated opportunity, and the second highest rated strength. The system can only grow stronger as those collaborative connections continue to solidify and spread, pulling in diverse stakeholders.

The largest threat to the system from this response group was the public's perception of health and the system's ability to educate.

Overall Key Health Issues

Workforce Development and Training

EPHS 8 is specifically about workforce development and training. Between the EPHS coding and the comment coding, the workforce of Missouri's health system is by far the biggest issue identified in this assessment.

Collaboration & Collective Impact

Both as an opportunity and as a weakness, collaboration was mentioned in multiple lines of coding (EPHS 4).

Emerging Public Health Threat Preparedness

Rather than reflecting one of the EPHS specifically, this theme was identified by stakeholder comments, which noted the system's capacity to address the growing (at the time) COVID-19 crisis and other emerging health threats.

The 10 Essential Public Health Services (EPHS) columns in the table represent:

1. Monitor health status to identify and solve community health problems.
2. Diagnose and investigate health hazards in the community.
3. Inform, educate and empower people about health issues.
4. Mobilize community partnerships and action to identify and solve health problems.
5. Develop policies and plans that support individual and community health efforts.
6. Enforce laws and regulations that protect health and ensure safety.
7. Link people to needed personal health services and assure the provision of healthcare when otherwise unavailable.
8. Assure a competent public and personal healthcare workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
10. Research for new insights and innovative solutions for health problems.

10 Essential Public Health Services (EPHS)

| Strength | | Weakness | | Opportunity | | Threat | |
|----------|---------|----------|---------|-------------|---------|--------|---------|
| EPHS | Count** | EPHS | Count** | EPHS | Count** | EPHS | Count** |
| 8 | 49 | 8 | 53 | 4 | 67 | 3 | 28 |
| 4 | 47 | 9 | 15 | 5 | 16 | 5 | 14 |
| 9 | 43 | 5 | 14 | 8 | 11 | 7 | 12 |
| 5 | 25 | | | | | 8 | 11 |
| 3 | 14 | | | | | | |
| 7 | 13 | | | | | | |

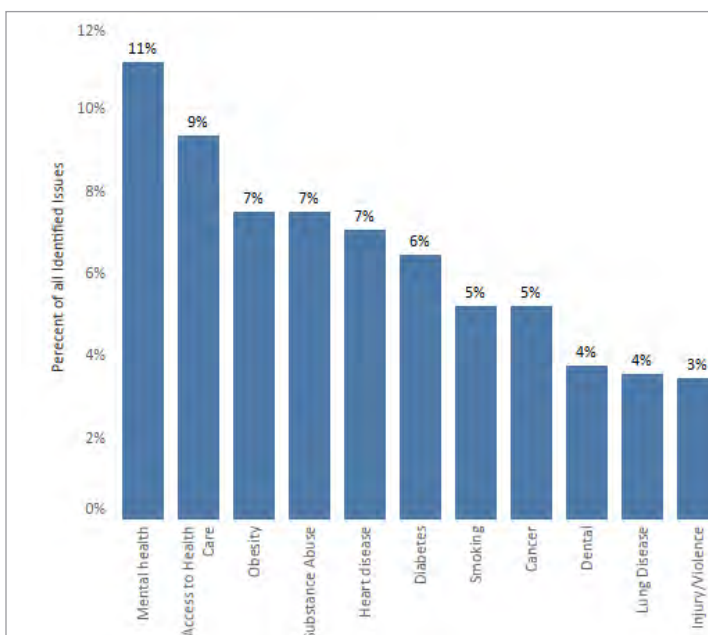
** The count is the total number of comments determined to be related to the associated EPHS. Those comments, which were determined to be related to multiple EPHS, were given 1 point on each applicable EPHS.

STATE HEALTH THEMES AND STRENGTHS ASSESSMENT

The Community Themes and Strengths Assessment (CTSA) is one phase of the Mobilizing for Action through Planning and Partnerships (MAPP), a strategic planning framework for improving community health. This phase is a qualitative assessment that offers a comprehensive understanding of community issues or concerns, perceptions about quality of life and resources available to improve health across the state. Most local health departments in Missouri conduct a community health assessment (CHA) and develop a community health improvement plan (CHIP) at least every five years. Similarly, all hospitals, which are tax-exempt under Section 501(c) (3) of the Internal Revenue Code (IRC), are required to conduct a community health needs assessment (CHNA) and adopt an implementation strategy every three years. The CTSA is part of the CHA and CHNA assessments, which answers the following questions:

1. What health-related issues are important to our state?
2. What are the general opinions regarding health and quality of life in the state?
3. What assets do we have that can be used to improve Missouri's health?

Figure 79 – Top 11 health issues identified in local health department and hospital assessments



Assessment Method

From 2019 to 2020, the DHSS reviewed all available local health department community health assessment and hospital community health needs assessments released within the past five years. The CHA and CHNA gathered CTSA through key informant interviews and community survey/focus groups. At the state level, CTSA information was used to help the public health system understand health issues that are important to Missouri residents.

What health-related issues are important to our state?

The top eleven priority health issues identified across all CHA and CHNA documents reviewed are listed in Figure 79 (mental health, access to health care, obesity, substance abuse, heart disease, diabetes, smoking, cancer, dental, lung disease and injury/violence).

What are the general opinions regarding health and quality of life in the state?

Those who participated in both stakeholder interviews and the community survey/focus groups were asked to provide opinions as to the most critical health issues facing their county. All of the local public health and hospital documents show the top five most important health and quality of life issues: lack of behavioral health providers, mental health issues, alcohol/drug abuse, obesity and cancer (Figure 80). The complete results of community perception on health and quality of life for each region are listed in Appendix A. All counties cited mental health and substance abuse as key areas with major impact on community health and quality of life.

According to the World Health Organization, mental health is a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully and is able to contribute to their community. Thus, mental health plays a major role in people's ability to maintain good physical health. Behavioral health encompasses behavioral factors in chronic illness care, care of physical symptoms associated with stress rather than diseases, and health behaviors, as well as mental health and substance abuse conditions and diagnoses.

Seven themes were drawn from analysis of the perceptions, opinions and beliefs that were emphasized in stakeholders interviews and community surveys/focus groups. These include:

- Collaboration and Commitment
- Health Inequalities
- Health Services Access and Cost Issues
- Mental Health and Behavioral Health Issues
- Modifiable Risk Factors
- Neighborhood and Built Environment
- Underserved Populations

Table 8 shows the summary of the stakeholder interviews and community surveys/focus groups. The themes offer additional insight into the results from the other MAPP assessments.

Figure 80 – General opinions regarding health and quality of life in the State

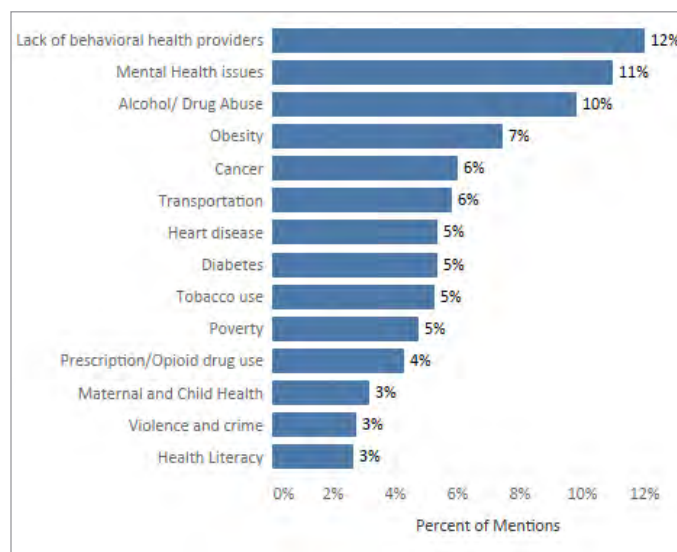


Table 8 - Stakeholder Interviews and Community Surveys/Focus Group Themes and Key Findings

| Themes | Summary Statement of Perceptions |
|---|---|
| Collaboration and Commitment | Many focus group participants stated they were unaware of all the existing health care resources and services within their respective communities. Communities across the regions emphasized the importance of both enhancing and strengthening collaboration and coordination among state agencies and health providers. They emphasized the importance of increased education and outreach through coordinated efforts with community members. Education should include outreach to promote addiction and substance abuse awareness, chronic disease management and screening, healthy eating habits and physical activities. |
| Health Inequalities | Most communities said there is a widening gap in income and education levels among residents in their community. Some communities indicated that there is a growing population that is homeless and an increase in refugees and immigrants. These populations have a difficult time accessing social services/welfare and it limits their ability to access health services. |
| Health Services Access and Cost Issues | Access to health care/medical care was identified as a one of the top health issue by local health departments and hospitals assessments. Stakeholders and communities cited the primary reasons why people are not able to access health services including physical, mental and dental health services was lack of insurance and ability to pay for health care. |
| Mental Health and Behavioral Health Issues | Mental health and substance use disorder (i.e. alcohol, illicit drugs, prescription pain medicine, or tobacco) emerged as a major concern to health and quality of Missouri citizens. Nearly all stakeholders and communities interviewed noted opioid crisis as a big health concern. They also perceived that many in the community suffering with mental health issues are going untreated because of insufficient medical providers. Rise in crime, level of violence and homelessness was attributed to increase in drug use. Several communities advocated for a strong need for behavioral health providers. |
| Modifiable Risk Factors | Unhealthy habits such as substance abuse, smoking, drug and alcohol abuse, and poor eating habits were perceived to be prevalent in several communities and were thought to contribute to negative health outcomes including obesity and mental health (depression, anxiety, etc.). Improving community infrastructure for places to walk, exercise, bike and increasing access to fitness facilities were noted as a very positive change in the community. |
| Neighborhood and Built Environment | Several communities mentioned good places to raise children, low crime/safe neighborhood, good schools as the most important factors that affect their health. Access to affordable and quality housing was noted as a high priority for low-income families. Furthermore, lack of public transportation impacts many vulnerable population's ability to get to medical appointments or medical treatment. |
| Underserved Populations | Several communities identified three main areas of need: elderly, rural population, and poverty. The poor elderly population in several communities are faced with challenges of accessing care due to limited transportation and fixed incomes. People with less education attainment and the lack of high-paying jobs in the community affect the health of the community. |

STATE FORCES OF CHANGE ASSESSMENT

Background

Unlike the other three assessments, the Forces of Change Assessment is less about identifying key health issues and more about identifying factors, which exist, and how they will affect identified key health issues. The purpose of this process was to assess significant factors, events and trends whose current or future occurrence might affect the health of Missourians or the effectiveness of Missouri's public health system.

It largely serves to answer two questions:

1. What is, or may, occur in the near future, which affects the overall Missouri health system and its citizens?
2. What threats or opportunities are generated by these occurrences?

Data Collection and Analysis

The Missouri Department of Health and Senior Services (DHSS) Office of Performance Management sent a survey to the State Health Partner Group in December 2020. The survey contained questions regarding possible forces affecting various sectors of Missouri. To keep the survey in line with the previous State Health Assessment Forces of Change data collection, the questions and the defined sectors were the same.

- **Social**-The relationship between individuals and groups.
- **Economic**-Resources, employment, wealth and funding.
- **Political**-Policies, laws, legislative actions and the individuals/groups that control the legislative system.
- **Environmental**-The built, natural and social systems that individuals and groups inhabit.
- **Legal**-Judicial and justice system, norms and values.
- **Ethical**-The rules and standards for precise conduct and integrity.

Results

The primary identified forces, regardless of sector, solidified around four key themes.

- **COVID-19:** While the virus is a continuing threat, there are additional associated issues, including the economic impact of the virus and the impact on health access related to the amount of resources being devoted to the pandemic rather than other health concerns.
- **Insurance:** Continued concern exists throughout the system regarding the accessibility of insurance options, whether through Medicaid or otherwise and the cost of insurance or covered care which are beyond the means of those with access to insurance.
- **Economic concerns:** While the COVID-19 pandemic as a theme addressed Missouri's economic concerns, further points were discussed specifically regarding increasing unemployment and job insecurity.
- **Inequity and Cultural Division:** The five years since Missouri's last State Health Assessment (SHA) has seen a rise in social unrest, related to issues around racial, wealth, judicial and other systemic inequities. Additionally, an increasingly polarized political climate has caused deep divisions in our communities.

Key Findings

Despite DHSS ongoing commitment and improvement in assuring quality health care access to all populations and communities, some Missouri residents still do not have the same opportunities to achieve good health and quality of life. The 2021 Missouri State Health Assessment revealed many disparities in health outcomes among race/ethnicity, older populations, and people with disabilities, veterans, women and LGBTQ individuals. Many disparities in health are rooted in inequities in opportunities and resources needed to be as healthy as possible. Healthy People 2020 defines a health disparity as "a particular type of health difference that is closely linked with social, economic and/or environmental disadvantage."^{xlv} Inequity on the other hand is defined as a difference in the distribution or allocation of resources (such as health insurance, education and clean air) between groups.

DHSS is dedicated to utilization of data for making informed decisions, understanding health disparities and understanding the social determinants of health to ensure health equity across the state.

While many disparities exist among minority groups, Missourians health status, stakeholder interviews and community surveys/focus data revealed that disparities vary across the seven defined Behavioral Risk Factor Surveillance System (BRFSS) Missouri regions. Disparities were more prominent in the southeast region. The 2019 County Rankings report ranks Missouri counties according to their summary measures of health outcomes and health measures. St. Charles County, located in the St. Louis Metro Region, has the highest ranking for health factors, which include health behaviors (tobacco use, diet and exercise, alcohol and drug use, sexual activity), clinical care (access to care, quality of care), social and economic factors (education, employment, income, family and social support, community safety) and the physical environment (air and water quality, housing and transit). St. Charles County

also ranks in the top position for health outcomes. Pemiscot County in the Southeast region ranks in the lowest position for both health health factors and health outcomes.

The Missouri SHA data shows that the southeast region has the poorest health outcome compared to other regions with the highest overall mortality rate, highest premature deaths, and lowest life expectancy. The region also demonstrates high-modified risk factors including: rate of mothers smoking while pregnant, adult smoking, obesity, poor mental health and suicide (Figures 81 and 82). Information on opinions regarding health and quality of life from stakeholder interviews and community surveys/focus groups conducted by local public health agencies and community health needs assessments carried out by hospitals, indicate that the top ten key areas of concern in southwest region's include: lack of health insurance, transportation, mental health issues, substance abuse, cancer, diabetes, heart disease, tobacco use and child abuse.

Figure 81 2019 Health Factors - Missouri

Source: County Health Rankings & Roadmaps

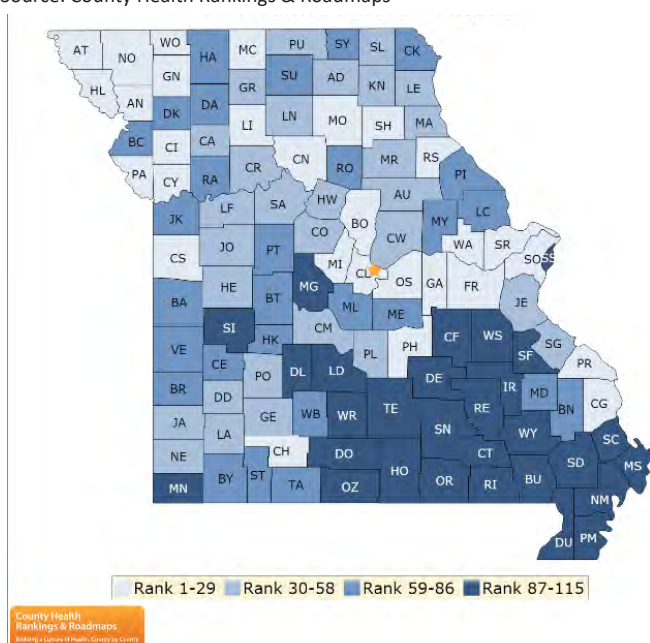
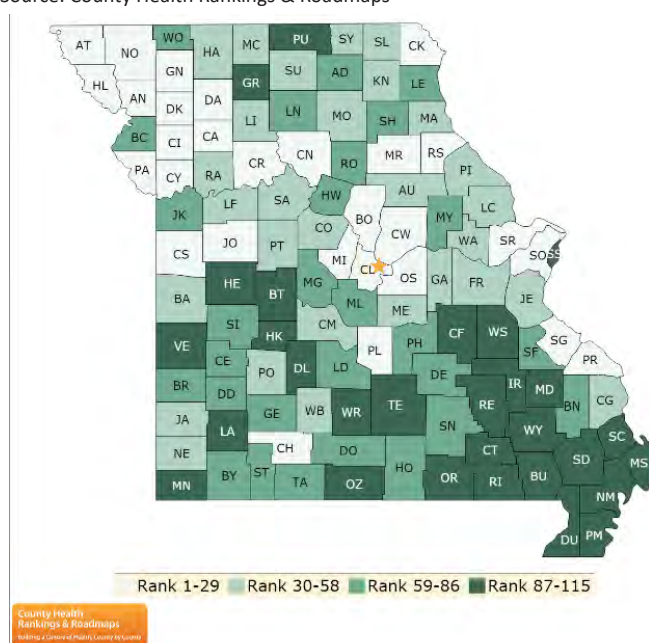


Figure 82 2019 Health Outcomes - Missouri

Source: County Health Rankings & Roadmaps



KEY HEALTH ISSUES (KHI)

The health issues identified in this section are the result of the four assessments of the MAPP model that have been detailed in previous sections. Each of these 17 Key Health Issues were identified in at least one of the four assessments. These are the overall issues that have been identified as requiring the health system's focus over the next five years to try and move the needle in making Missourians healthier and safer.

In the companion document, the State Health Improvement Plan (SHIP), these 17 KHI are grouped together into six Strategic Priority Issues. The intention of the SHIP is to lay out a strategic method for addressing these KHI. In the following subsections, each issue is presented with key facts, as well as vital background information, a look at what possible threats may affect the issues and what opportunities the health system may have to respond to those threats.

Obesity

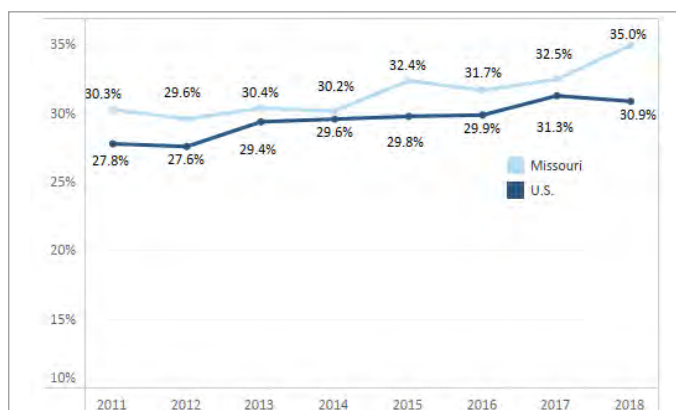
Obesity is defined as a weight that is higher than what is considered healthy for a given height. Body Mass Index (BMI), a calculation using a person's height and weight, is used in screening for overweight and obesity. The CDC defines a BMI of 25-30 as overweight and a BMI of 30 or higher as obese. Obesity increases an individual's risk for a myriad of chronic diseases and most recently has been associated with poor COVID-19 infection outcomes. A number of key facts have been listed below that highlight why obesity was determined to be a critical health issue for Missouri.

Key Facts

- Adult obesity increased from 30.3% in 2011 to 35.0% in 2018 (Figure 47).
- Children and adults who are obese are at an increased risk of:
 - o High blood Pressure,
 - o High Cholesterol,
 - o Type 2 Diabetes,
 - o Psychological issues such as lower self-esteem, and
 - o Lower quality life.
- In 2018 10.2% of all children in Missouri between the ages of 6-17 reported not having exercised, played a sport, or participating in physical activity for at least 60 minutes in the past week.^{xlvi}
- In the same year, BRFSS reported that 26.1% had not had any physical activity in the last 30 days.
- The costs associated with obesity and obesity-related health problems are staggering. One study estimated the medical costs of obesity to be \$342.2 billion (in 2013 dollars). Beyond direct medical costs, the indirect costs of decreased productivity tied to obesity are estimated at \$8.65 billion per year.^{xlvii}
- Obesity was the third most identified health issue in the Community Themes and Strengths Assessment, which looks at health assessments completed by local agencies and hospitals across the state.

Figure 47- Percent of adults that report a BMI of 30 or more, compared to U.S. (2011-2018)

Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance system (2011-2018)



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- "COVID 19 response has caused other major health stressors to receive less attention (tobacco, obesity, opiates, etc.)" (Respondents to Forces of Change Assessment Survey).
- Lack of physical activity due to isolation and quarantine.
- Depression and stress correlate with obesity.
- The lasting effects of COVID-19 on individuals who contracted it may make exercise more difficult.

Economics

- The cost of being poor and how poverty and obesity are interrelated.
- Poor access to healthy foods and opportunities for physical activity coupled with easy access to less healthy options can contribute to higher rates of obesity.
- Obesity rates decline with increased levels of education. Populations with less than a high school education have higher obesity rates than college graduates.
- Similarly, those with incomes less than \$25,000 have higher obesity rates than those with incomes over \$75,000.
- People who live in poverty have a lack of access to healthy food, poor exercise opportunities and lack of access to insurances resulting in lack of access to healthcare.
- <https://www.americashealthrankings.org/explore/annual/measure/Obesity/state/MO>.

Insurance

- Lack of access means lack of preventative care.
- Insurance premiums may increase for obese individuals based off ailments that are comorbid with obesity, including heart disease and diabetes.

Inequity & Cultural Division

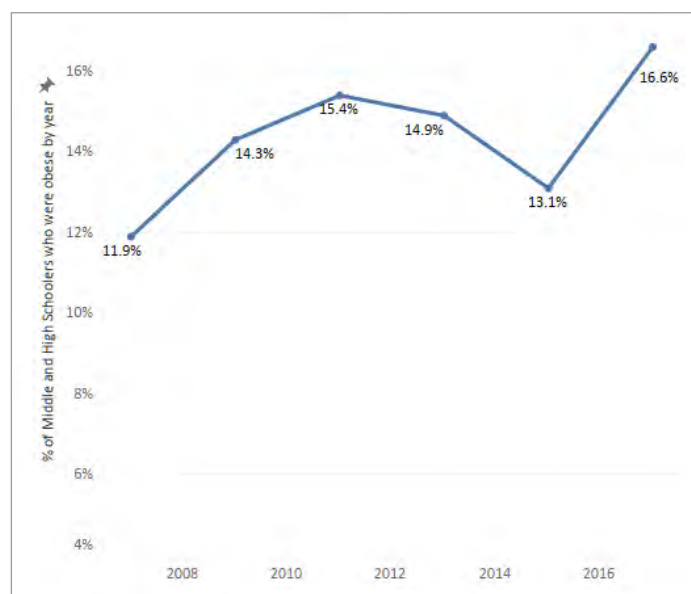
- White populations have lower obesity rates compared to other race categories. The highest obesity rates in Missouri are among multiracial populations.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Community outreach and education.
- Partnerships with community athletic programs.
- Support for physical activity to be included in after school programs.
- Expertise in health education.

Figure 53- Percentage of Missouri middle and high school students who were obese 2007-2017

Source: Missouri Department of Health and Senior Services, 2017



Heart Disease

Adults with diabetes are nearly twice as likely to have heart disease or stroke as adults without diabetes. People with diabetes are also more likely to have certain risk factors, such as high blood pressure or high cholesterol, which increase their chances of having a heart attack or a stroke. High blood glucose from diabetes can damage the blood vessels and the nerves that control the heart. Over time, this damage can lead to heart disease. People with diabetes tend to develop heart disease at a younger age than people without diabetes (National Institute of Diabetes and Digestive and Kidney Diseases). Some people have a heart attack without having any symptoms, which is known as a "silent" myocardial infarction (MI). It occurs more often in people with diabetes. (WebMD.com)

Heart disease falls into three general areas, namely Coronary Artery Disease (CAD), Congestive Heart Failure (CHF) and Heart Attack. CAD is caused by plaque buildup in the wall of the arteries that supply blood to the heart (coronary arteries). Plaque is made up of cholesterol deposits. Plaque buildup causes the inside of the arteries to narrow over time, limiting blood flow to the heart. CAD can range from no symptoms, to chest pain, to a heart attack. CHF is caused when the heart muscle does not pump blood as well as it should. When this happens, blood often backs up and fluid can build up in the lungs. Symptoms include shortness of breath, fatigue, swollen legs, and rapid heartbeat. Heart Attack occurs when a part of the heart muscle does not get enough blood. The more time that passes without treatment to restore blood flow, the greater the damage to the heart muscle.

Each type of heart problem requires different treatment but may share similar warning signs. It is important for people to see their physician to receive a correct diagnosis and prompt treatment. 911 should be called if someone is having chest pain, pressure or tightness, or a squeezing or aching sensation in the center of the chest.

Health conditions that increase the risk of heart disease are: 1) **high blood pressure** -a medical condition that happens when the pressure of the blood in the arteries and other blood vessels is too high. High blood pressure, if not controlled, affects the heart and other major

organs of the body, including the kidneys and brain; 2) blood cholesterol levels particularly high LDL: Cholesterol is a waxy, fat-like substance made by the liver or found in certain foods. If we eat food containing more cholesterol than the body can use, the extra cholesterol can build up in the walls of the arteries, including those of the heart. This leads to narrowing of the arteries and can decrease the blood flow to the heart, brain, kidneys, and other parts of the body; 3) Diabetes mellitus- Diabetes causes sugar to build up in the blood. The risk of death from heart disease for adults with diabetes is higher than for adults who do not have diabetes; 4) Obesity- Obesity is excess body fat. Obesity is linked to higher "bad" cholesterol and triglyceride levels and to lower "good" cholesterol levels. Obesity can lead to high blood pressure and diabetes as well as heart disease.

Lifestyle choices can significantly affect the risk of developing heart disease:

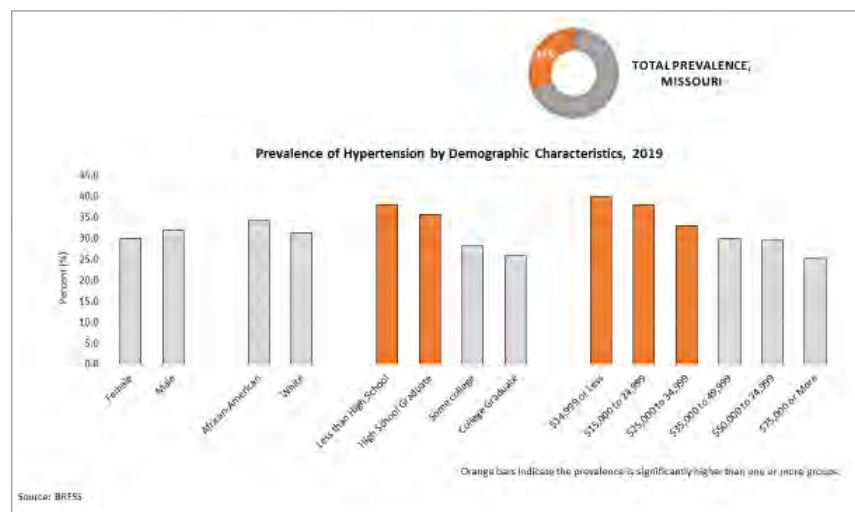
- *Dietary choices* that include a diet high in saturated fats, trans fat, and cholesterol has been linked to heart disease and related conditions, such as atherosclerosis. In addition, too much salt (sodium) in the diet can raise blood pressure.
- *Insufficient physical activity* contributes to the development of heart disease. It can also increase the chances of having other medical conditions that are risk factors, including obesity, high blood pressure, high cholesterol, and diabetes. Regular physical activity lowers the risk for heart disease.
- *Drinking too much alcohol* can raise blood pressure levels and the risk for heart disease. It also increases levels of triglycerides, a fatty substance in the blood, which can increase the risk for heart disease.
- *Tobacco use* increases the risk for heart disease and heart attack. Carbon monoxide from cigarette smoke reduces the amount of oxygen that your blood can carry which damages the heart and blood vessels and increases the risk for heart conditions such as high blood pressure, atherosclerosis and heart attack.

Key Facts

- About half of all Americans (47.0%) have at least one of three key risk factors for heart disease: high blood pressure, high cholesterol, and smoking (CDC).
- Heart disease continues to be the leading cause of death in Missouri at 15,941 deaths. Heart Attack is about 24.0% of all Heart Disease Deaths (Provisional 2020 MO Vital Statistics).
- Stroke is the sixth cause of death: 3,275 deaths (Provisional 2020 MO Vital Statistics).
- Hypertension prevalence is 31.2 in white adult population and 34.2% in Black or African American adults (2019 BRFSS).
- The prevalence of heart attack is higher among males, whites and those with less education and income.
- The prevalence of hypertension is higher among the Black or African Americans and those with less education and income.
- The prevalence of stroke is higher among those with less education and income.
- Profound disparities exist between Black or African American and whites in Cardiovascular Disease Mortality by Race.

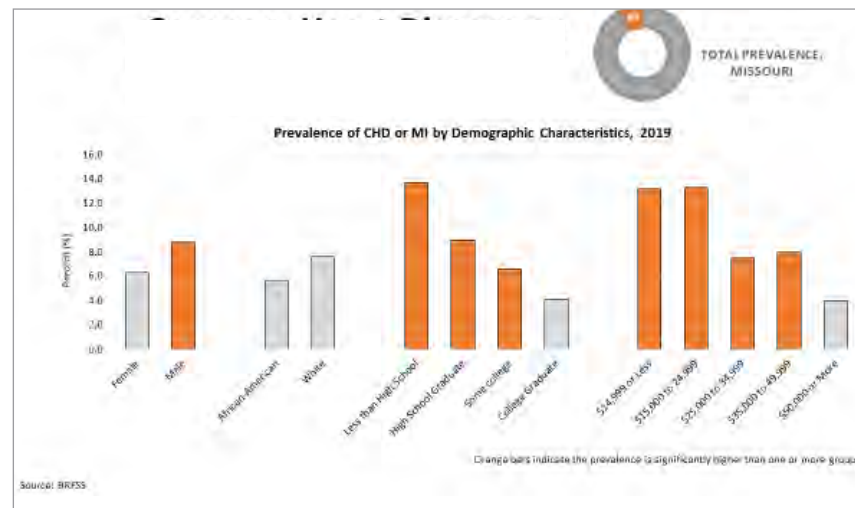
Hypertension

Source: Behavioral Risk Factor Surveillance System



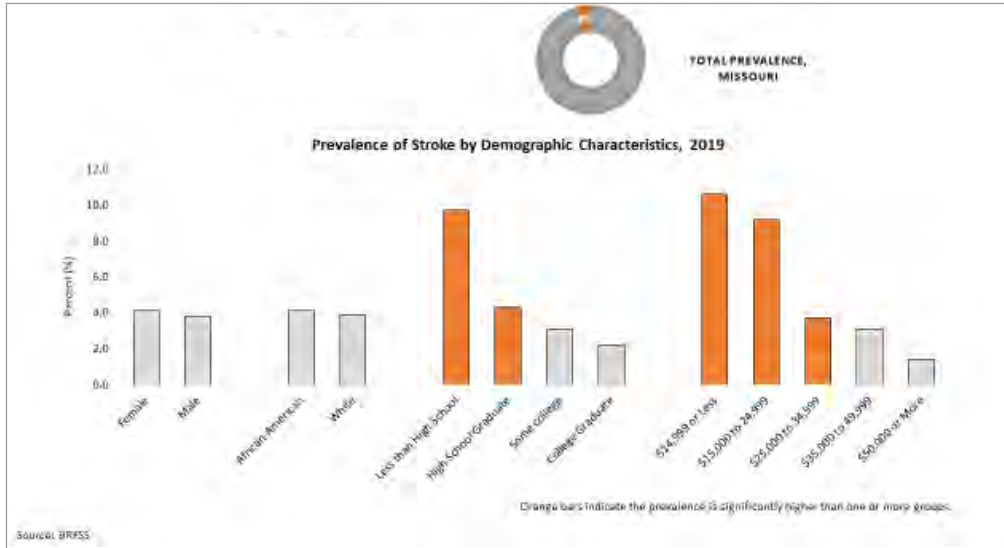
Coronary heart disease or myocardial infarction

Source: Behavioral Risk Factor Surveillance System



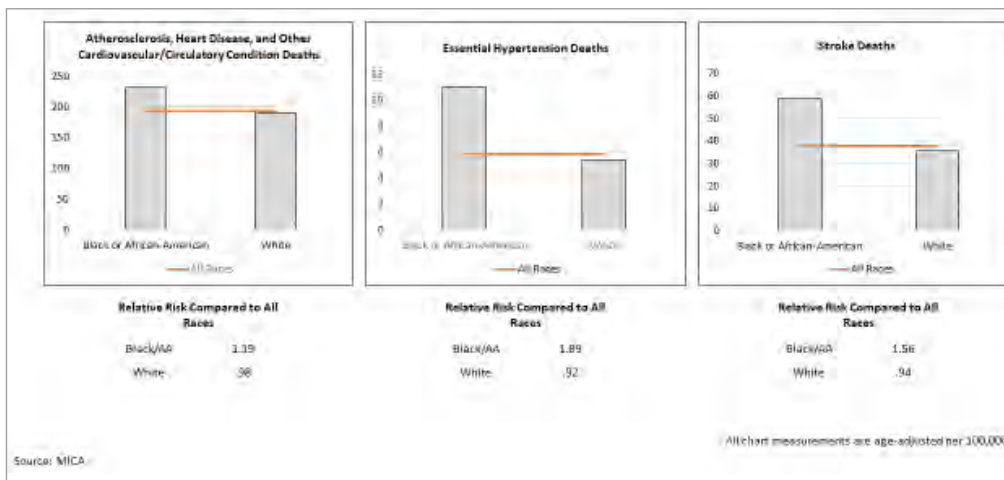
Stroke

Source: Behavioral Risk Factor Surveillance System



Cardiovascular disease mortality by race, 2019

Source: Missouri Information for Community Assessment



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The pandemic has shifted focus away from chronic health issues.
- We lack full information for how COVID-19 will impact heart health long term.
- Preventive screenings may have been on hold during the lockdown, and even after some Missourians may hesitate to visit healthcare facilities.

Economics

- Heart disease is a costly disease.

Insurance

- Heart disease disproportionately affects low-income, minority populations who are unlikely to have access to the programs such as the hypertension self-management and education and support covered by insurance.
- Lack of insurance may cause individuals to put off the preventive screenings that can detect heart disease early, leading to worse outcomes.
- For those with heart disease, lack of insurance means an interruption in treatment, medications and overall health.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Knowing that those with heart disease tend to have more serious complications from COVID-19, there is an opportunity to build awareness for the importance of heart disease prevention and management.
- Opportunities to bring together partners from multiple sectors to address the challenges related to heart disease prevention and management of hypertension in Missouri.
- By expanding Medicaid in Missouri the number of covered beneficiaries in the state will increase.
- Helping providers to enroll as Medicaid/Medicare suppliers will increase opportunities for programs to be reimbursed by health plans, making programs such as self-monitoring blood pressure and other heart disease lifestyle change programs more sustainable.



Diabetes

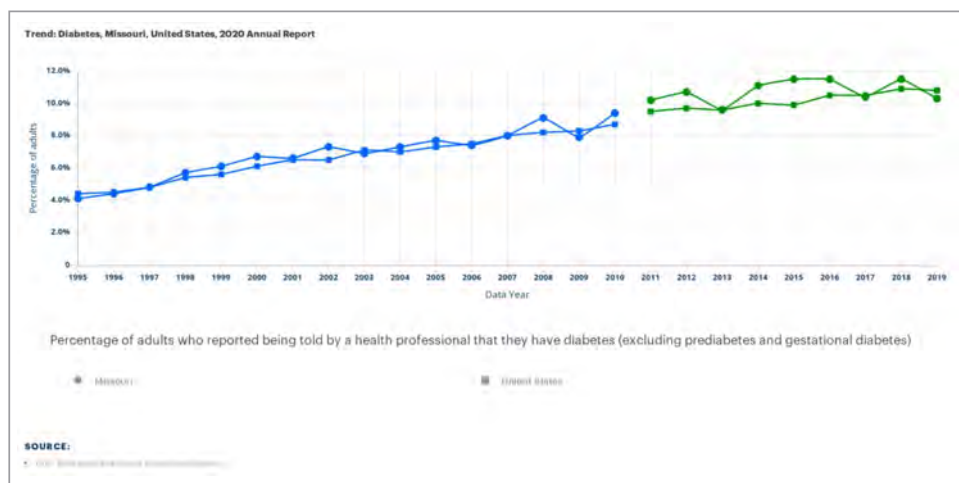
According to the Centers for Disease Control and Prevention (CDC), diabetes is a chronic health condition that affects how your body turns food into energy. If you have diabetes, either your body does not make enough insulin or cannot use the insulin it makes as well as it should, causing too much blood sugar to stay in your bloodstream. Type 1 diabetes occurs when your body stops making insulin. With Type 2 diabetes, your body does not use insulin well and cannot keep blood sugar at normal levels. Gestational diabetes develops in pregnant women who have never had diabetes. It usually goes away after pregnancy, however, it increases risk for developing Type 2 diabetes later in life. Prediabetes exists when blood glucose levels are high, but not yet high enough to be diagnosed with diabetes. In the U.S., one in three adults have prediabetes and less than 10.0% realize they are at high risk for developing Type 2 diabetes. The listed key facts that highlight why diabetes was determined to be a key health issue for Missouri.

Key Facts

- While there was a decrease in Missouri adults who reported being told by a health professional that they have diabetes in 2019 (10.3%) compared to 2018 (11.5%), the overall trend is still on the rise. Missouri's diabetes rates rank 17th in the nation.^{xlvi}
- Diabetes disproportionately affects some populations more than others. Those with a higher prevalence of diabetes in Missouri include:^{xlviii}
 - o Men (10.5%), compared to women (10.1%).
 - o Multiracial (15.3%) and African American (11.9%) adults, compared to Caucasian (10.1%).
 - o Adults with less than a high school education (17.2%).
 - o Adults with income less than \$25,000 (17.6%).
 - o Older adults age 65+ (21.7%), compared to younger adults age 45-65 (13.1%).
- African Americans with diabetes have a higher death rate than Caucasians.^{xlix}
- The American Diabetes Association estimates that diabetes and prediabetes cost an estimated \$5.9 billion in Missouri each year.ⁱ

Diabetes Figure 1. Trend: Diabetes, Missouri, United States, 2020 Annual Report

Source: CDC, Behavioral Risk Factor Surveillance System



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The pandemic has shifted focus away from diabetes and other chronic health issues.
- Patients may delay accessing healthcare, both screenings and services, due to COVID-19.
- The long-term effects of COVID-19 on diabetics are unknown.
- Isolation led to less physical activity which had a negative impact on diabetes.

Economics

- Diabetes is a costly disease.
- High prices for quality food may be correlated to cases of diabetes.
- When the economy is a concern citizens may prioritize other expenses over medication/testing supplies.

Insurance

- Diabetes disproportionately affects low-income, minority populations who are unlikely to have programs such as the National Diabetes Prevention Program and Diabetes Self-Management Education and Support covered by insurance.
- Lack of access to insurance decreases the likelihood of patients getting early screening.
- Lack of access to care can mean a lack of availability for insulin and other diabetes medications.
- Both of these factors may lead to increased preventable hospitalizations.



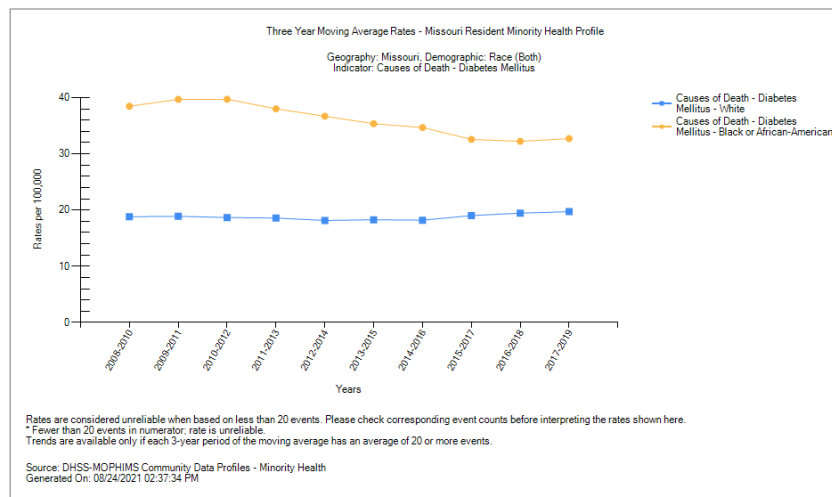
Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Knowing that those with diabetes tend to have more serious complications from COVID-19, there is an opportunity to build awareness for the importance of diabetes prevention and management.
- Opportunities to bring together partners from multiple sectors to address the challenges related to diabetes prevention and management in Missouri.
- By expanding Medicaid in Missouri the number of covered beneficiaries in the state will increase.
- Assisting National Diabetes Prevention Program and Diabetes Self-Management Education and Support providers to enroll as Medicaid/Medicare suppliers will increase opportunities for programs to be reimbursed by health plans, making their programs more sustainable.

The pandemic has shifted focus away from diabetes and other chronic health issues.

Diabetes Figure 2. Three Year Moving Average Rates – Missouri Resident Minority Health Profile

Source: DHSS-MOPHIMS Community Data Profiles – Minority Health



Cancer

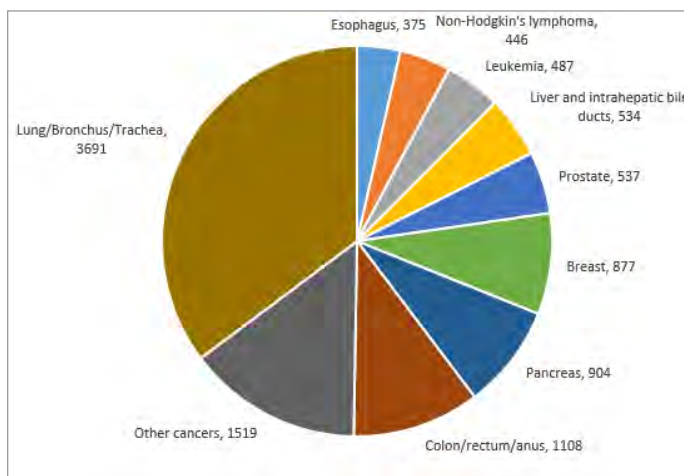
Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it may result in death. Most types of cancer cells form a lump or mass called a tumor and are named after the part of the body where the tumor originates. Cancer is caused by both external and internal factors.

Key Facts (BRFSS)

- Cancer is the second leading cause of death in Missouri, following heart disease.
- Missouri's age-adjusted cancer mortality rate was the 12th highest in the U.S. in 2017.
- In 2018, there were an estimated 346,722 adult cancer survivors living in Missouri (excluding skin cancer).
- It is estimated that 45% of cancer deaths in the U.S. are caused by modifiable lifestyle factors such as tobacco use, excess body weight, and alcohol consumption.

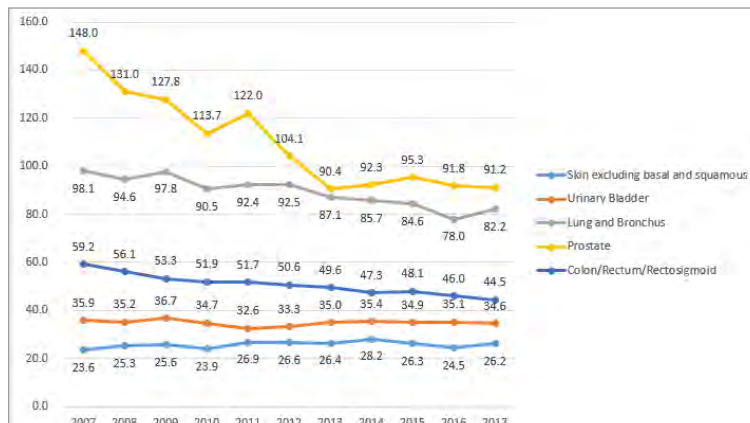
Ten leading causes of cancer deaths, Missouri, 2017, BRFSS

Source: Behavioral Risk Factor Surveillance System



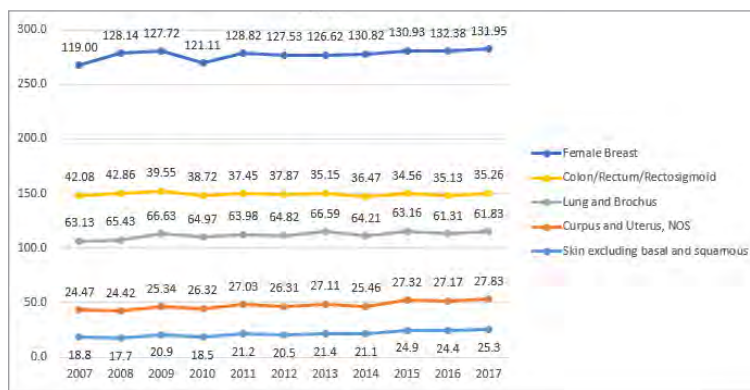
Ten-year trend in age-adjusted incidence rates for the five leading invasive cancers in males, by cancer site, Missouri, 2007-2017, BRFSS

Source: Behavioral Risk Factor Surveillance System



Ten-year trend in age-adjusted incidence rates for the five leading invasive cancers in females, by cancer site, Missouri, 2007-2017, BRFSS

Source: Behavioral Risk Factor Surveillance System



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID 19

- Prolonged delays in screening related to the COVID-19 pandemic may lead to delayed diagnoses, poor health consequences, and an increase in cancer disparities among women already experiencing health inequities.
- Increased risk of illness from COVID-19 to cancer patients.
- Lack of screenings due to COVID-19.

Insurance Access

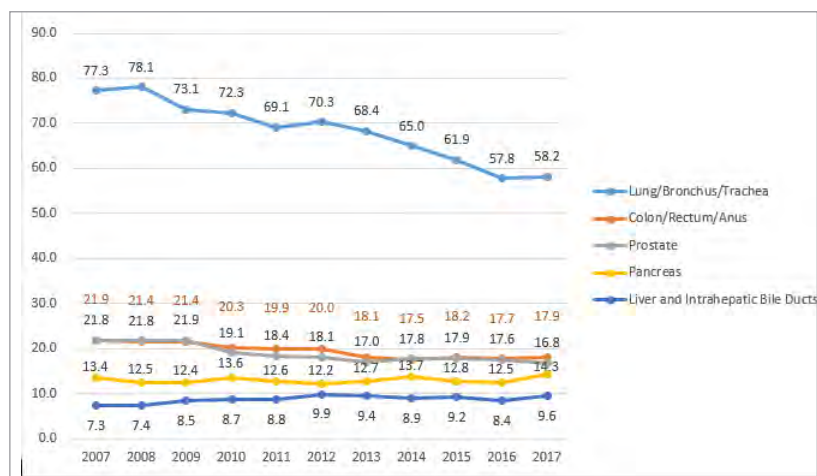
- Lack of insurance causes individuals to delay medical care/treatment which can lead to worse health outcomes.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- CDC Funding granted to major health systems/cancer centers in Missouri to enable outreach, education and evidence based interventions to improve cancer screening rates across the state.
- Participation in various cancer consortiums and coalitions that aim to lessen the cancer burden in Missouri by facilitating the sharing of best practices, lessons learned, strengths and challenges in cancer prevention, screening, survivorship and access to care.

Ten-year trend in age-adjusted death rates for the five leading invasive cancers in males, by cancer site, Missouri, 2007-2017, BRFSS

Source: Behavioral Risk Factor Surveillance System



Ten-year trend in age-adjusted death rates for the five leading invasive cancers in females, by cancer site, Missouri, 2007-2017, BRFSS

Source: Behavioral Risk Factor Surveillance System



Tobacco Use

Cigarette smoking remains the leading cause of preventable death and disability in the United States, including Missouri, despite a significant decline in the number of people who smoke. Tobacco use costs the state over \$3 billion annually to treat smoking-related illness. Nearly one out of five Missouri adults smoke cigarettes^{lii} and one out of five high school students use electronic cigarettes.^{li} Each year, nearly 11,000 Missouri adults die from smoking-related illness and over 822,000 nonsmoking Missourians are exposed to secondhand smoke.

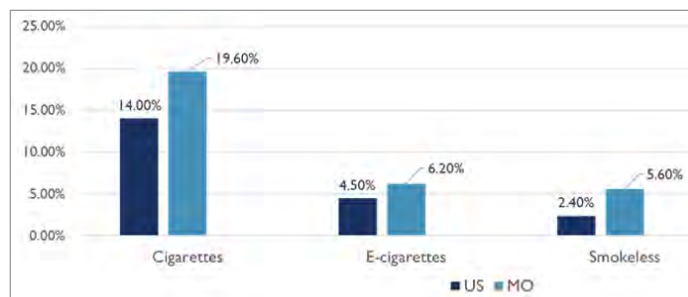
Key Facts^{liii,liv}

Missouri has higher rates of adult tobacco product use than the national average and ranks 10th in the nation for the percentage of adults who smoke cigarettes.

- Although cigarette smoking has declined significantly since 1964, disparities in tobacco use remain across groups defined by race, ethnicity, educational level, and socioeconomic status and across regions of the country.
- 71.3% of Missouri workers are not protected from exposure to secondhand smoke, and those most likely to be exposed work in the hospitality industry and are more likely to identify as a racial minority.
- Missouri has the lowest cigarette sales tax in the nation.
- Youth use of tobacco products in any form is unsafe, irrespective of whether it is smoked, smokeless, or electronic. If the current rate of smoking continues, 128,000 Missourians who are younger than 18 today will prematurely die from smoking related illnesses.

Adult Tobacco Use

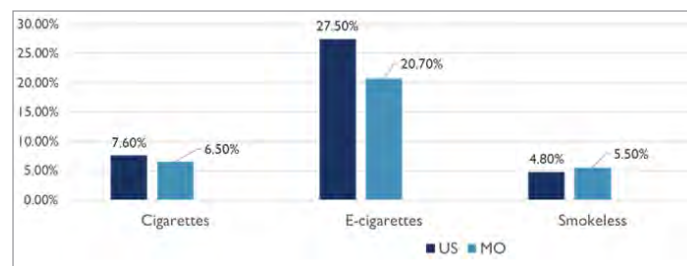
Source: Cornelius ME, Wang TW, Jamal A, Loretan C, Neff L Tobacco Product Use Among Adults – United States, 2019. Morbidity and Mortality Weekly Report, 2020. Volume 69 (issue 46); pages 1736-1742. [accessed 2020 November 19]. Missouri Behavioral Risk Factor Surveillance System, 2019.



| Prevalence of Current Smoking by Socio-Demographic Variables, BRFSS 2019 | |
|--|--------------------|
| Descriptor | Smoking Prevalence |
| Adults 18 years and older | 19.6% |
| Unemployed | 45.2% |
| Uninsured | 40.2% |
| Income less than \$15k | 39.0% |
| Medicaid enrollees | 40.6% |

Youth Tobacco Use

Source: 2019 Missouri Youth Risk Behavior Survey, 2019 National Youth Tobacco Survey



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- Increased stress from the pandemic may lead to increased tobacco use.

Economics

- Poverty may see addictions such as smoking be prioritized over needs.
- Financial hardship may cause additional problems for people trying to find cessation assistance or tobacco replacement products.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Missouri is one of two states that has no barriers to tobacco cessation services for Medicaid (MO HealthNet) members.
- There is strong evidence for what works to prevent and reduce tobacco use, access and exposure to secondhand smoke and vape aerosol. We know what works and Missouri has a strong network of tobacco prevention and control advocates who are working tirelessly for a tobacco-free Missouri.
- The majority of Missouri adults support a local and statewide smoke free law (80.0%).^{lv}

Workforce Development and Training

Workforce Development and Training is an extremely important key health issue. Without proper development and training, staff are not given the tools to be successful in keeping Missourians healthy and safe. Workforce development focuses on developing a talented workforce, enriching professional growth, recognizing team member's efforts and building a culture of coaching. This development and training leads to staff being committed to serving citizens and meeting their high expectations while also allowing team members the opportunity to grow, learn and apply their talents.

DHSS utilizes a multitude of platforms to encourage Workforce Development and Training. MO Learning was created in 2019 to help give team members multiple options for professional growth. MO Learning contains more than 4,000 modules on a diverse range of topics.

Workforce Development and Training is always transitioning and evolving with the ever-changing environment. A new tracking system was put into place in March 2020 to react to these changes. The ESS Team Member Training Portal (TMTP) was created to help with

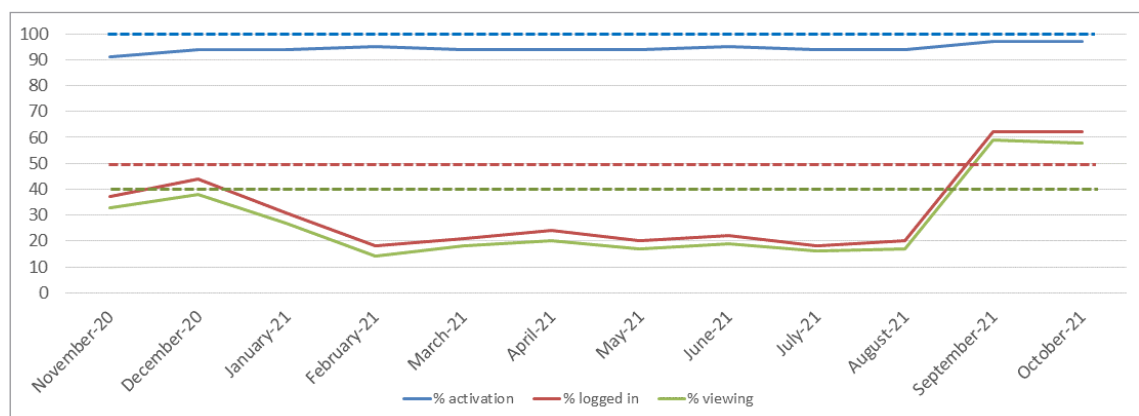
ease in development tracking and accountability by staff. Along with the TMTP, ENGAGE 2.0 also brings supervisors and team members together monthly to have meaningful professional development conversations. These conversations provide an opportunity to help team members improve in their current role and position themselves for future success.

Key Facts

- In July 2021, 70% of staff held ENGAGE meetings with supervisors.
- Leadership is critical to any organization's success and in FY21 DHSS was 78% compliant with the Leadership Development Rule.
- MO Learning as well as New Employee Orientation and Basic Supervision for new supervisors are offered to aid in compliance with the State of Missouri Leadership Development Rule (1 CSR 20-6.010).
 - o This rule requires all supervisors and managers to obtain 52 hours of professional development in a fiscal year.
 - o This requirement encourages staff to focus 1 hour per week on professional development and leadership.

MO Learning July Summary - DHSS

Source – Office of Administration, Division of Personnel. Talent Management Dashboard.



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- There is a possibility of a large portion of the public health workforce either retiring or leaving the field, this can lead to a loss of institutional knowledge.
- High burnout due to the COVID-19 pandemic.

Economics

- Shortage of workers in the field.
- Organizations may have a "survival" mentality, and not focus on developing their employees.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Public health system partnerships with academic institutions to create a career pipeline for health system workers.
- Support for a workforce development mindset by encouraging accreditation among local public health agencies.



Collaboration

The State Health Assessment and its companion document (State Health Improvement Plan (SHIP)) have been built from the ground up with the intention of creating a set of collaborative documents to help guide the Missouri health system. One of the things mentioned most often during the qualitative research portion of these documents was Missouri's need for more effective collaboration to tackle the ever changing public health environment.

Key Facts

- During the Community Themes and Strengths Assessment, collaboration was one of the seven most identified themes.
- There are a number of efforts named in the SHIP that specifically focus on the need for increased collaboration for the purposes of actually affecting change in the system.
- The State Health System Assessment also identified collaboration as both an overall opportunity and weakness of the Missouri health system as a whole.

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The pandemic changed and may continue to change how collaboration can take place.
- Distance may still need to be maintained which can hinder meetings.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- The State Health Partner Group that was assembled for the creation of the State Health Assessment and the State Health Improvement Plan can be used as a resource.
- The Center for Local Public Health Services and the Office of Performance Management within DHSS can act as facilitators for cross sector collaboration.

Emerging Public Health Threat Preparedness

Emerging public health threats in the form of infectious disease are diseases in humans that have increased in the past two decades or threaten to increase in the near future. These diseases can greatly challenge preparedness efforts when control recommendations and guidance may not be immediately available. In addition to infectious diseases, unexpected natural disasters and ransomware attacks can negatively impact public health, if there is an interruption in delivery of necessary healthcare, unannounced loss of power, sanitation, or a disruption in communications to local public health providers. A number of key facts have been listed below that highlight why emerging public health threat preparedness was determined to be a critical health issue for Missouri.

Key Facts

- Since 2011 the DHSS Emergency Response Center (ERC) has activated on 66 occasions due to the following incidents
 - o 16 Severe Spring/Summer Weather Events
 - o 17 Severe Winter Weather Events
 - o 3 DHSS COOP Events
 - o 4 Suspicious Substance – Potential Bio-Terrorism
 - o 4 Civil Unrest
 - o 8 Disease Outbreaks
 - o 9 Planned Events – World Series; Presidential Visits; Inaugurations, PGA Championship
 - o 4 Hurricane Assists
 - o 1 Factory Explosion
- They have also participated in 69 exercises, drills or trainings for emergency response staff.

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- Strained resources and manpower.
- Burnt-out staff may lead to the system being unprepared for further health emergencies.
- COVID-19 continues to be a concern and emerging variants may challenge the system.

Economics

- Response to public health crises is intrinsically linked to funding.

Inequity & Cultural Division

- People that are already marginalized are at greatest risk from public health threats.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Trainings and other outreach opportunities concerning Missouri's public health data system.
- Cross sector partnerships around community resilience.
- Collaboration with local public health agencies to analyze and streamline communication channels during a crisis.
- Strengthening Emergency Operations Plans (EOPs) at the State and Local levels to establish a basic emergency activation algorithm and to clarify roles and responsibilities at each response level.
- Design and distribute "Just In Time Preparedness Training" (JIT) to be provided when rapid threat onset occurs.
- Develop a resource tracking system to manage consumable supplies and durable medical equipment.

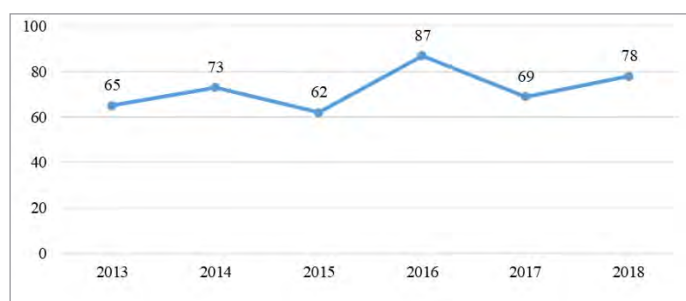
Infant and Maternal Mortality

Maternal Focus

A pregnancy-associated death is defined as a death during or within one year of pregnancy, regardless of the cause. These deaths make up the universe of maternal mortality; within that universe are pregnancy-related deaths and pregnancy-associated but not related deaths. Maternal mortality is a key indicator of society's overall health.

Number of deaths, Missouri 2013-2018

Source: DHSS, Maternal Mortality, 2018



Key Facts (2018 Data)^{vi}

Missouri ranks 42nd in the nation on maternal mortality.

The pregnancy-related mortality ratio for Black or African American women was 87.6 per 100,000 live births which is more than 4 times greater than the rate for white women (21.9).

The rate of pregnancy-associated deaths for women on Medicaid was more than 4 times greater than the rate for those with private insurance.

Mental health conditions were the leading underlying cause of pregnancy-related deaths (50.0%).

The leading cause of injury-related deaths were overdoses/poisonings (49.0%) followed by motor vehicle crashes (28.0%).

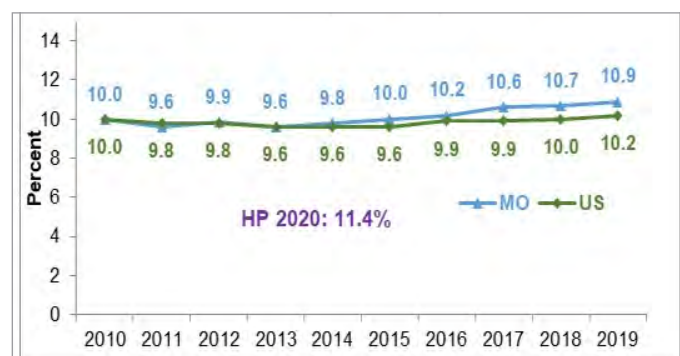
Substance use disorder contributed to 54.0% of pregnancy-related and 43% of pregnancy-associated but not related deaths.

Infant Focus

Infant mortality is the death of an infant before his or her first birthday. The infant mortality rate is the number of infant deaths per 1,000 live births. In addition to giving us key information about maternal and infant health, the infant mortality rate is an important marker of the overall health of a society. Two leading causes of infant mortality is preterm birth and sudden infant death syndrome. When an infant is born prematurely, ensuring the infant is delivered at a level III (or higher) hospital equipped with the necessary functions to provide critical care of these infants can improve outcomes tremendously.

Preterm birth rate, MO and US, 2010-2019

Source: DHSS, Preterm Birth Rate, MO, 2019



DHSS, Preterm Birth Rate, MO, 2019

Percent of VLBW infants delivered at level III facilities, MO, 2010-2019

Source: DHSS, Percent of VLBW Infants Delivered at Level III Facilities, MO 2019



DHSS, Percent of VLBW Infants Delivered at Level III Facilities, MO, 2019

Key Facts^{lvi}

- Missouri's preterm birth rates were higher than the national rate (10.9% vs. 10.2%).
- Missouri's 2019 infant death rate of 6.0 per 1,000 live births was slightly higher than the most recent national rate of 5.7 in 2018.
- In 2019, over 12.0% of Missouri infants that were born very preterm were not born at a facility specifically equipped for their care.

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- COVID-19 hospitalizations may affect access to birthing spaces.
- Limited health resources can limit prenatal care.
- COVID-19's effect on infants and pregnant individuals is still unknown.
- Increased stress from any factor can lead to negative health outcomes.

Insurance Access/Economics

- The cost of pregnancy is substantial for quality care, and lack of insurance can have serious long-term consequences for both mother and child.

Inequity & Cultural Division

- Women of color have historically worse infant and maternal mortality outcomes than their white counterparts.

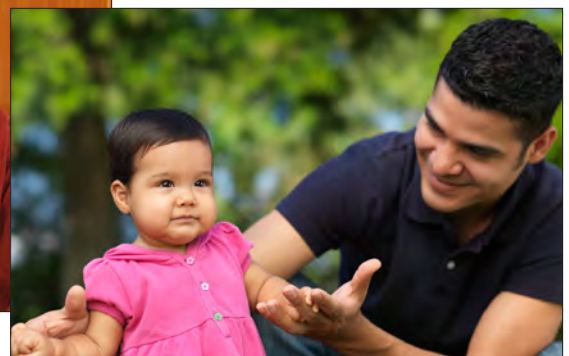
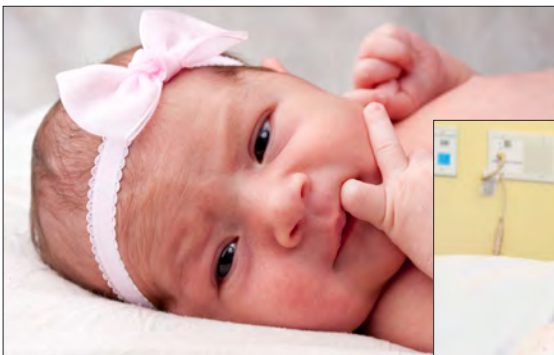
Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

Infant Mortality

- Missouri Alliance for Innovation on Maternal Health (AIM) program
- Maternal and Child Learning Action Network (MC LAN)
- Missouri Moms and Babies ECHO (Extension for Community Healthcare Outcomes)
- Mothers, Infants & NAS ECHO
- DHSS Title V Program
- Nurture KC
- Generate Health
- Bootheel Babies

Maternal Mortality

- Maternal and Child Learning Action Network (MCLAN)
- Missouri Moms and Babies ECHO (Extension for Community Healthcare Outcomes)
- Mothers, Infants & NAS ECHO
- DHSS Title V Program
- Nurture KC
- Generate Health
- Bootheel Babies



Health Inequity and Disparity

According to the CDC, health equity is when each person has the chance to reach “his or her full health potential,” without facing obstacles from “social position or other socially determined circumstances.”^{lvii} Equitable access involves access to health and healthcare professionals, healthy food, a safe living environment, and the ability to be well across all aspects of life, from work to home life to medical care. The Health Resources and Services Administration defines health disparities as differences in health outcomes that vary by population.^{lvii} A number of key facts are highlighted below to show why health inequities and disparities are a concern for Missouri.

Key Facts

Health Insurance Coverage

Overall, the percentage of uninsured Missourians increased slightly from 10.5% in 2013 to 10.6% in 2020, exceeding the national uninsured rate, but some demographic groups, such as those living in rural counties, Hispanic, younger than 35 years old, and/or having less than a high school diploma, are more likely than others to be without health insurance. An estimated 95,000 Missouri children were uninsured in 2019, representing an increase of approximately 34% since 2016. As of 2020, 13.4% of women (ages 19-44) in Missouri were without health insurance, compared to 12.6% nationally, and in 2019, 6.5% of children (under 19) in Missouri were without health insurance, compared to 5.7% nationally.^{lix}

Economy

The median household income in Missouri in 2019 was estimated at \$57,409, which was less than the national median household income of \$65,712.^{lx} In 2018, the overall poverty rate for Missouri was 13.2%, with a poverty rate of 18.3% for children age 18 and under and a poverty rate of 19.9% for children under the age of 5.^{lxi} The state unemployment rate decreased from 8.1% in June 2020 to 4.2% in February 2021 (not seasonally adjusted; Preliminary). According to USDA definitions, 17 counties, including St. Louis City, can be classified as being ‘persistently poor’.^{lxii} The 2019 Missouri rate of homelessness was 10 per 10,000 (6,179 persons), which was less than the national rate of 17 per 10,000.^{lxiii}

Infant Mortality

Missouri was ranked 31st for low birth weight and 33rd on infant mortality.^{lxiv} Black or African American babies are significantly more likely to be born at low birth weight than white infants (14.0% of live births vs. 7.0% in 2010-2018) and to be born before 37 weeks gestation (14.0% vs 10.0%). While the infant death rate decreased from 6.0 per 1,000 live births in 2019 to 5.7 in 2020, Black or African American infants continue to have a significantly higher rate than white infants. However, the ratio between Black or African American and white infant mortality rates dropped from 2.1 in 2013 to 1.9 in 2018, indicating an almost 10% decrease in the ratio between races.

Maternal Mortality

Black or African American mothers continue to experience rates of maternal mortality over twice that of white women (81 per 100,000 live births for Black or African American mothers vs. 31 per 100,000 live births for white). Similar disparities are observed in severe maternal morbidity (SMM): in 2017, white mothers experienced SMM at a rate of 92 per 10,000 live birth while Black or African American mothers experienced SMM at a rate of 213 per 10,000 live births.

Oral Health Care

Many Missourians have limited access to dental health services due to socioeconomic factors. A total of 79 of the 95 dental Health Professional Shortage Areas (HPSAs) in Missouri are in rural counties, and 11 counties lack a dentist. Residents of rural counties are also less likely to have received a preventive dental visit in the past year than non-rural residents (31.0% rural vs. 44.0% non-rural).^{lxv}

Healthcare Access/Infrastructure

Effective, coordinated, high-quality health care is a key factor in peoples’ ability to reach and maintain optimal health and for the early detection of chronic conditions that may impact longevity or quality of life. However, access to quality health care is impacted by a variety of factors, including insurance coverage, geographic location, financial and work considerations and unavailability of timely preventive or specialist care. In Missouri, access to care is further complicated by

fragmented geographic availability of care due to rural hospital closures and reduction of services available, such as eliminating obstetric or specialty care. Hospital closures in rural regions of the state necessitate that residents must secure extra time and arrange transportation to obtain routine and emergency services. Of Missouri's 115 jurisdictions, 99 are considered rural. Typically, Missourians who live in rural areas must travel to Columbia, St. Louis, or Kansas City to receive specialty care, which may represent upwards of eight hours of round-trip driving for some patients. In Missouri, there are 60 hospitals with at least one obstetric bed, but they are not evenly distributed through the state: 61 counties have no delivery beds.^{lxvi} Black or African American maternal child health focus group participants in the St. Louis region were more likely to report being unsatisfied with the quality of care they received locally, and many reported they prefer to travel farther to receive higher-quality care outside of St. Louis City.

Substance/Tobacco Use

Missouri ranks 41st among all states for prevalence of tobacco use, including traditional cigarettes, chewing tobacco, cigars and electronic cigarettes. Rates of tobacco use (before, during and after pregnancy) are highest in the southeast region, including the Bootheel. Rates of cigarette use during pregnancy are highest among white (15.0%) rural (20.0%) women.^{lxvii} Deaths from opioid overdoses have increased among all Missourians over the last five years. Black or African American females are dying from opioid overdoses at nearly twice the rate as white females. Counties with the highest rates of overdose deaths are primarily located in the St. Louis



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- Poorer and rural communities that have more difficulty with obtaining or have more resistance to vaccination will be at an increased risk for even greater reductions in health outcomes.
- Existing gaps in healthcare due to inequity will widen.

Economics

- Increased cost of living has a negative effect on citizens' expenditures on healthcare.
- Poverty, job loss, poor housing options and other factors all contribute to health inequity and all stem from economic concerns.

Insurance

- Lack of insurance coverage in underserved populations can lead to less preventative and screening based care.
- Lack of insurance access is largely considered one of the markers of health inequity.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- There is the opportunity to create a health equity cross sector task force to address health equity in the entire state. This includes creating a health equity toolkit.
- DHSS implemented a new Culturally and Linguistically Appropriate Services Standards policy in December 2020, adopting the Culturally and Linguistically Appropriate Services (CLAS) standards as general guidelines in order to provide a uniform framework for developing and monitoring culturally and linguistically appropriate services.
- The Missouri COVID Fusion Cell and the MO Advisory Committee on Equitable COVID-19 Vaccine Distribution, created during the pandemic, have created a high level of inter-agency cooperation among various entities across state government and external stakeholders across Missouri.
- DHSS has a Pregnancy-Associated Mortality Review (PAMR) board that analyzes all maternal deaths that occur while a woman is pregnant, or within one year after the end of her pregnancy.

Opioid Use

While other public health emergencies have come to the forefront of the nation over the last two years, the opioid crisis continues to rage on throughout Missouri and the country at large. While there have been some gains made in battling this epidemic, it continues to harm far too many citizens.

Key Facts

In 2019, Missouri had the 18th highest overdose fatality rate in the nation.^{lxviii}

1,878 Missourians died of a drug overdose in 2020, making it the most lethal year to date for drug overdoses in the state.^{lxix}

The highest overdose rates (both fatal and nonfatal) can be found in the St. Louis Region and areas surrounding the 1-44 corridor.^{lxx}

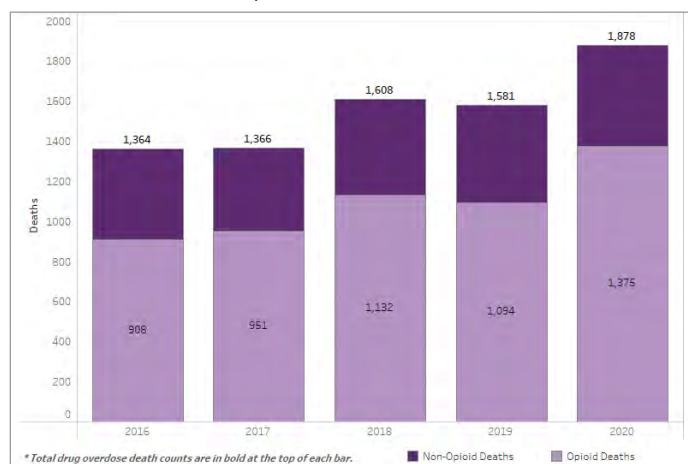
Black or African American males had consistently higher overdose rates (regardless of drug type or severity) compared to other demographics. One of the greatest disparities exists in opioid fatalities. More specifically, the rate of fatal opioid overdoses for Black or African American males was more than 7 times greater than the rate for white females in 2020.^{lxxix,lxx}

The Kansas City Metro Region saw the biggest increase in synthetic opioid overdose deaths from 2019 to 2020, with an increase of 149.0% (an increase from 35 to 87 deaths).^{lxxix}

Stimulants became increasingly present in opioid overdose deaths in 2020. Stimulants were involved in 34.0% of opioid overdose deaths in 2020. Additionally, statewide overdose deaths where both stimulants and opioids were involved increased by 57.0% from 2019 to 2020 (300 to 471 deaths).^{lxxix}

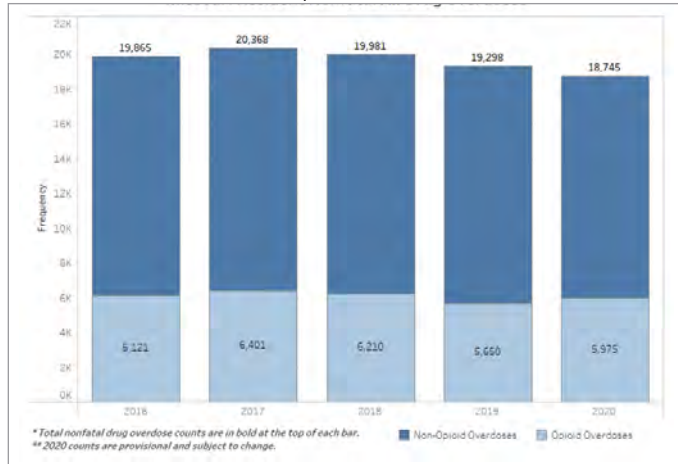
Missouri resident fatal all drug overdoses

Source: Missouri Vital Statistics Death File, Section of Epidemiology and Public Health Practice, Missouri Department of Health and Senior Services



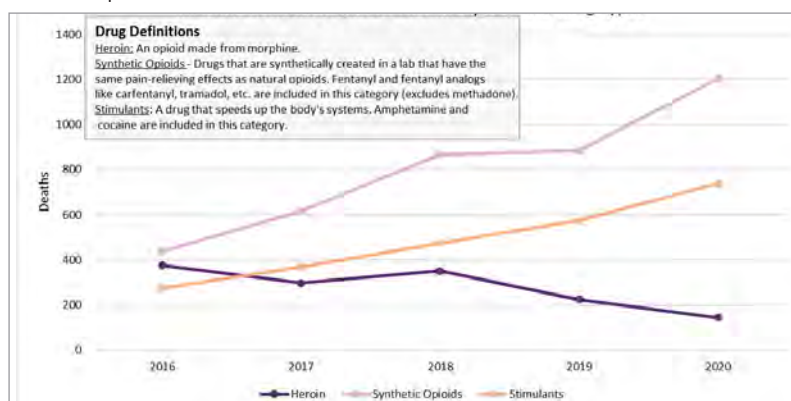
Missouri resident nonfatal all drug overdoses

Source: Missouri Vital Statistics Death File, Section of Epidemiology and Public Health Practice, Missouri Department of Health and Senior Services



Missouri resident overdose deaths by selected drug types

Source: Missouri Vital Statistics Death File, Section of Epidemiology and Public Health Practice, Missouri Department of Health and Senior Services



Drug type categories are not mutually exclusive. Each count represents a death involved the respective drug type. Thus, a death can be counted as both a heroin and synthetic opioid death.

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The mental health concerns associated with the COVID-19 pandemic may have an increased impact on opioid use.
- COVID-19's lasting physical affects and the interruptions in access may have a disproportionate effect on those who have substance abuse issues and cannot get in to see a healthcare professional.

Economics

- Stress from economic pressures can cause an increase in substance abuse.

Insurance

- The high cost of treatment is a barrier for addressing opioid addiction.
- As lack of access increases, whether due to unemployment, poverty or some other factor, self-medicating and relying on opioids may increase.
- Lack of insurance access directly affects treatment options for opioids.

Inequity & Cultural Division

- Lack of access to care in underserved areas creates roadblocks to recovery.
- Stigma around substance abuse disorder is often tied to cultural stereotypes.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Naloxone standing order
- Missouri Opioid Dashboard
- The Overdose Data to Action Cooperative Agreement awarded by the Centers for Disease Control and Prevention (CDC) supports these interventions:
 - o Increased surveillance efforts designed to improve the quality of data key to effective policy and program planning.
 - o Improved public health and public safety partnerships.
 - o Funding provided to local public health agencies and community based organizations to prevent opioid and drug misuse, overdose, and mortality.
 - o Expanded media campaigns to raise awareness of the problem, reduce stigma, and introduce harm reduction measures.
 - o Education of clinicians about appropriate CDC prescribing behaviors.
 - o Coordination of a statewide harm reduction conference for professionals in the substance use field.
 - o Credential opportunities for professionals in the substance use field.



Suicide

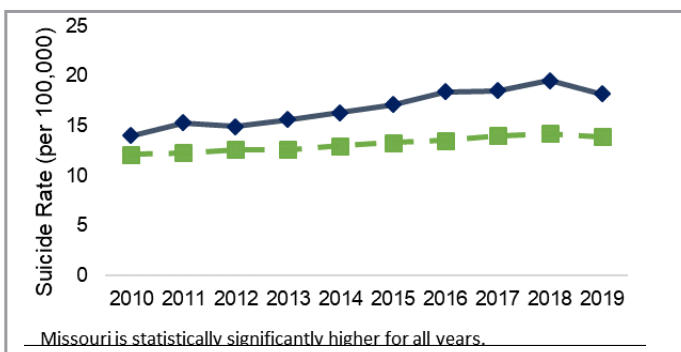
Suicide is defined by the CDC as an action one takes to cause themselves harm with the intent to end their life.^{lxxi} In addition to direct harm, medical costs and long-term health effects, suicide and suicide attempts can result in far-reaching emotional, physical and economic impacts for loved ones and communities.^{lxxi} Missouri's high rate of suicide consistently exceeds the national average, steadily increasing since 2005. The following are a few key facts to highlight why suicide is a key health concern for Missouri.^{lxxii}

Key Facts

- From 2010-2019, suicide was the 10th leading cause of death for Missourians.
- Suicide was the 2nd leading cause of deaths among 10-24 year olds.
- From 2010-2019, deaths from suicide resulted in 212,294 years of potential life lost before age 65.^{lxxiii}
- Males die by suicide at significantly higher rates than females, and rural Missourians commit suicide at a significantly higher rate (21.1 per 100,000) compared to urban residents (17.3 per 100,000).
- In 2020, 63.0% of all suicides involved a firearm.^{lxxiv} While the use of a firearm has been consistently high for males who die by suicide, it is important to note that the use of firearms in suicides among females has been increasing.^{lxxiv}
- In addition, the economic toll of suicide can be staggering. In 2010, it was estimated that suicide deaths by suicide cost Missourians approximately \$1 billion in medical costs and lost productivity.^{lxxv}
- In 2010, the average cost of each suicide was estimated at \$1.3 million, with an estimated 97% due to lost productivity and 3% in direct costs (such as coroner/ medical examiner fees).^{lxxvi}

Suicide rates for Missouri and the U.S.

Source: CDC Wonder Online Database



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The COVID-19 virus has led to isolation, loss of jobs, increased stress on the population (especially healthcare and other front line workers) and other triggers that have negative correlation with mental health.

Economics

- Unemployment and negative economic circumstances are linked to poor mental health.
- Increased mental health concerns, and suicide also leads to lost wages and productivity, both for families and for businesses.
- Unemployment is linked to lack of insurance, which further reinforces the lack of mental health treatment.

Inequity & Cultural Division

- Many physical aspects of inequity are correlated with poor mental health. This includes poverty, educational gaps and homelessness among others.

Insurance

- While some health insurance covers mental health access, the level at which it is funded is not always equitable.
- Even when insurance is held, there may be a lack of providers in many parts of the state.

Other

- Social stigma continues to be a negative influencer of mental health, and will continue to be a barrier to the access of services.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Focus on mental telehealth.
- Support mental health first aid training throughout the state.
- Renewed focus on maternal mental health

Oral Health ^{bxxix}

Oral health care is a growing concern in the United States and Missouri for several reasons. People of all ages are affected by oral health. Children with dental pain and poor oral health often miss school and have difficulties with speaking, eating and learning. Nationwide, more than 51 million school hours are lost each year due to children having a dental-related illness. Poor dental health and gum disease during pregnancy have been linked to pre-term births, low birthweight babies and preeclampsia. Chronic oral health problems can be precursors to more serious heart and lung diseases, they can be symptoms of serious viral infections and they can also cause more serious health issues such as severe bacterial infections. A number of key facts have been listed below that highlight why oral health was determined to be a key health issue for Missouri.

Key Facts

- During a Basic Screening Survey (BSS) in 2018-2019 school year that looked at the dental health Missouri's Third Grade student population, the following was learned:
 - o 55% of Missouri's children had a history of tooth decay, which is lower than the national average of 62%.
 - o 29% of Missouri's children had untreated tooth decay; the national average is 22%.
 - o 30% of Missouri's children had protective dental sealants while the national average is 42%.
- The 2018 Pregnancy Risk Assessment Monitoring System (PRAMS) found that 42.3% of Missouri women had a preventive dental visit during pregnancy, which was slightly lower than 2014 (47.0%). In Missouri, mothers 20-24 years (27.0%) were less likely to have had a preventive dental visit than those 30-34 years (52.7%) or those 35 and older (65.0%).
- Missouri adults older than 65 years of age from the lowest socioeconomic group were five times more likely to have lost all of their permanent teeth due to tooth decay or gum disease than individuals from higher socioeconomic groups.

| Indicator | Missouri | National | National Measure | HP 2020 Objective |
|--|--|----------------------------------|-----------------------------|---------------------------|
| Percentage of Adults Who Have Visited a Dentist in the Last Year | 63.3% 2018 | 67.3% 2018 | Median, N=53 | N/A |
| Percentage of Adults Who Have Had Teeth Cleaned in the Last Year | 61.7% 2018 | 69.0% 2018 | Median, N=53 | N/A |
| Complete Tooth Loss Among Adults 65 and Older | 65 and Older: 18.8% (65 to 74 year-olds: 15.7%) 2018 | 65 and Older: 13.5% 2018 | Median, N=53 | 65 to 74 year-olds: 21.6% |
| Loss of 6 or More Teeth Among Adults 65 and Older | 42.8% 2016 | 36.0% 2016 | Median, N=53 | N/A |
| Percent Served by Community Water Systems that Receive Fluoridated Water | 75.6% 2018 | 73.0% 2018 | National Percentage | 79.60% |
| Caries Experience Among Third Grade Students | 54.8% 2018-2019 | 50.5% 2015-2016 | National Percentage | 6 to 9 year-olds: 49% |
| Untreated Tooth Decay Among Third Grade Students | 28.5% 2018-2019 | 15.3% 2015-2016 | National Percentage | 6 to 9 year-olds: 25.9% |
| Dental Sealants Among Third Grade Students | 29.7% 2018-2019 | 42% 2011-2014 | Median, N=53 | 6 to 9 year-olds: 28.1% |
| Cancer of the Oral Cavity and Pharynx Incidence | 12.6 per 100,000 population 2016 | 11.7 per 100,000 population 2016 | Age-adjusted incidence rate | N/A |



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- Fear of COVID-19 may have led to a reduction in people accessing dental services. This may have long term effects on Missourians' dental care.

Insurance Access

- Dental insurance is not available to all Missourians, and the lack of care has a direct negative impact on dental health.
- Loss of dental insurance or jobs can lead to a delay in needed dental treatment, leading to more severe problems.
- When Medicaid recipients can find a Medicaid provider, the wait time can be as high as 8 months, making the patient prolong treatment or seek treatment from an Emergency Department.

Economics

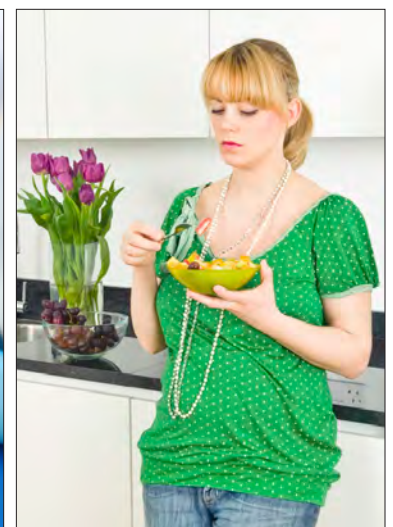
- The cost of dental care and its prioritization will both be directly influenced by the economic well-being of Missouri citizens.

Other

- Nursing Home residents may be overlooked for dental exams due to priority and the belief that the elderly will lose their teeth-which does not have to be the case.
- There may be difficulty in finding providers who can accommodate patients with special needs such as those who are bed-ridden, wheelchair bound or suffering from dementia.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Education on the importance of drinking fluoridated water to improve the oral health of all people regardless of income, education, race or age.
- Free dental clinic Missouri Mission of Mercy (MOMOM) which occurs every other year and provides free dental care to participants.
- A Basic Screening Survey (BSS) for Older Adults is currently being conducted to survey several hundred elderly in nursing homes and congregate meal sites. With this data, we hope to show the need among this population.
- DHSS and Department of Social Services leaders look to streamline the Medicaid provider application process.



Violent Crime/Intentional Injury

Injury and violence are significant and largely preventable public health problems. Each year, injuries and violence keep millions of adults and children from achieving their goals.

Unintentional injuries have been the 4th leading cause of death among Missourians since 2010.^{lxxviii} Unintentional injuries occur without any intention of harming oneself or others, while intentional injuries result from purposeful actions of harm.

Violent crime, which includes murder, rape, robbery and aggravated assault, can have a physical safety and psychological impact on the health of a community.

Key Facts

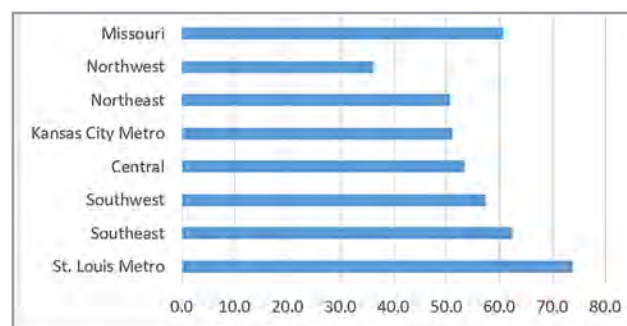
- In 2019, the rate of unintentional cause of death was 61.0 per 100,000 (age-adjusted rate), which was above the U.S. rate of 49.3/100,000. The main contributors are:^{lxxix}
 - o Accidental poisoning (25.3 per 100,000) (US: 20.2).
 - o Motor vehicle traffic deaths (14.8 per 100,000) (US: 11.1).
 - o Falls (9.8 per 100,000) (US: 9.8).
 - o The St Louis metro area (BRFSS region) area had the highest rate of unintentional injuries, with 74.0 per 100,000.
- In 2019, Missouri's rate of violent crime was 495.0 per 100,000 population, which was above the U.S. rate of 379.4/100,000.
 - o Aggravated assault had the highest rate per 100,000 population (357.4), followed by robbery (80.8 per 100,000), rape (47.5 per 100,000), and murder (9.9 per 100,000).^{lxxx}
- Missouri's age-adjusted rate of violence-related injury deaths was approximately 28.8 per 100,000; suicide had an age-adjusted rate of 18.1 while homicide had an age-adjusted rate of 10.8.^{lxxviii}
- Missouri residents are hospitalized and/or treated in the emergency department (ED) because of injury each year. In 2019 there were:
 - o 553,618 ED visits (the age-adjusted rate was 9,188.1 per 100,000).
 - o 37,326 inpatient visits (the age-adjusted rate was 539.9 per 100,000).^{lxxxii}
- The highest rate of hospitalizations occur in Missourians

aged 85 and over while the highest hospitalization count is for Missourians aged 75-84.^{lxxxii}

- In Missouri males have higher rates of deaths, hospitalizations and ED visits from injuries. In fact, males experience death from injury at a rate two times that of females.^{lxxviii} However male hospitalizations and ED visits rates are very similar but just slightly higher than for females.^{lxxx}

Violent Crime Figure 1 – Region unintentional deaths compared to Missouri overall, 2019

Source: Missouri Department of Health and Senior Services, (age-adjusted rate per 100,000)



Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- COVID-19's impact on the issue of violent crime and intentional injury is linked with the mental health concerns and isolation that have occurred during the pandemic. Unemployment, isolation, the loss of social connection and community all have a correlation with increased crime rates.

Economics

- A decrease in economic wellbeing in the state could lead to an increase in intentional injury and violent crime.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Family Voice/Parent Advisory Council or other community based coalitions throughout the state of Missouri.
- Missouri Injury and Violence Prevention Advisory Committee.
- The Missouri Violent Death Reporting System and other surveillance systems.
- Partnership with the Missouri Suicide Prevention Network, infrastructure for learning created by partners working with other state agencies and non-profits.

Health Service Access and Cost

Health care access and quality is identified as one of the five key areas in the Social Determinants of Health (SDOH) framework by Healthy People 2030. Available transportation options and driving distance to quality health care services at hospitals or clinics impacts health care access just as significantly as access to insurance. Insurance status impacts access to health care services, especially in situations when primary care physicians can coordinate so a patient can receive the appropriate health screenings. Individuals without health insurance are “less likely to have a primary care provider, and they may not be able to afford health care services and medications they need.”^{lxxxii}

In Missouri, the Small Area Health Insurance Estimates Program (SAHIE) provides data that allows for analysis by rural and urban metrics for a variety of demographic indicators. Due to SAHIE being a national survey, neither confidence intervals nor statistical significance for any of the comparison groups in Missouri could be determined. Because most persons 65 and older receive Medicare coverage, analysis was limited to the under 65 population.

Estimates based on county data from 2019 revealed that the uninsured rate for the under age 65 population was 3.9 percentage points higher in rural areas compared to their urban counterparts (14.6% versus 10.7%). The uninsured rate improved over the last decade with both rural and urban rates decreased by slightly more than 3 percentage points. In 2009, the rural uninsured rate was 17.9% and the urban rate was 13.9% for the under age 65 population.

Data for a limited number of age groups was available and analysis provided additional insights. The under 19 population had much lower uninsured rates for both rural and urban populations. The state average for the under 19 population was 6.5%, which was less than half of the 13.9% rate for persons age 21-64. The rural versus urban disparity was slightly less for the under 19 population with the rural uninsured rate 2.5 percentage points higher (8.2% vs. 5.7%). The 50-64 age group had an uninsured rate below the state average at 10.1%. The rural vs. urban disparity was also below the state average at 3.2 percentage points. Although uninsured percentages for the young adults (20-39) was not utilized (due to not being directly available), it could be inferred

based on the age groups used that rates for younger adults were both above the state average and also had the highest rural vs. urban disparity.

Key Facts

- For the under 65-age group, the counties with the highest uninsured rates are all rural.
 - o The four counties with uninsured rates above 20.0% were scattered throughout the state with McDonald in the Southwest region having the highest rate at 22.7%.
 - o Northeast Counties Scotland (21.6%), Morgan (21.0%) and Knox (20.8%) had the highest uninsured rates.
 - o The four counties with uninsured rates below 10.0% were all urban. St Charles had the lowest uninsured rate at 6.9%.
- For the under 19-age group: the 16 counties with the highest rates (all above 10.0%) were all rural. Maries in the Central region experienced the highest uninsured rate for children at 14.8%.
- While data by race was not available for rural/urban analysis, estimates show that statewide the Hispanic uninsured rate (22.4%) was around double both the white non-Hispanic (11.1%) and Black or African American non-Hispanic (13.6%) rates.
- Male uninsured rates were higher than female rates for both rural and urban counties. However, this gender disparity was higher for rural areas where the difference was 2.3 percentage points compared to 1.6 points for urban regions.
- Uninsured rates were highest for persons near or below the federal poverty level. The rural uninsured rate of 23.1% for persons below 138.0% of the FPL nearly matched the 22.8% estimate for urban areas. For persons between 138.0%-400.0% of the FPL, the uninsured rates declined to 17.4% in rural counties and 15.6% in urban.

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- The pandemic may continue to have a lasting effect on the access to health services for Many Missourians. This is for a number of reasons: the number of patients who did not/could not seek preventive care due to the pandemic, the lack of available healthcare professionals as burnout affected the workforce and additionally, those who have been affected by COVID-19 themselves may see increased needs going forward.

Economics

- As poverty and unemployment increase, the number of Missourians who have a difficult time accessing healthcare services increases.
- Funding is integral in addressing the built environment.

Inequity & Cultural Division

- An increasingly diverse population will require new positions and programs to meet their needs.
- Underserved areas, including rural Missouri and urban centers remain a concern.

Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Focus on telehealth options
- Mobile health units
- Expansion of Medicaid

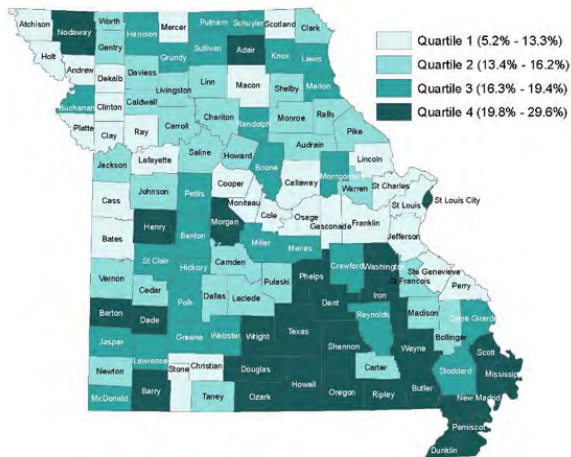
Economics

The link between income and life expectancy has been well established.^{lxxxiii} Education, race and gender also intersect with income and health to further complicate the relationship between income and life expectancy. Lower economic status is tied to an increased risk of certain chronic diseases.^{lxxxiv} Economic policies impact health outcomes, thus recognizing the importance of reducing poverty as a necessary first step to improving health.

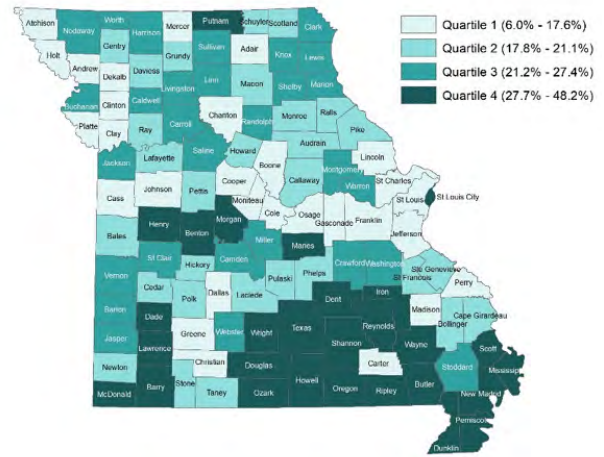
Key Facts

- In Missouri from 2015 to 2019, 13.7% of residents were living below the federal poverty level (FPL).
- Almost half of those living below FPL were living in extreme poverty, which was at or below 50.0% of the FPL.
- Rural counties in Missouri had a higher rate of poverty than urban counties, with 16.5% of rural residents and 12.3% of urban residents in poverty.
- Nationally, 13.4% of Americans lived at or below the FPL from 2015-2019.
- From 2010-2014 to 2015-2019, childhood poverty decreased from 21.5% to 18.7%. In 2015-2019, rural counties had a higher childhood poverty rate than urban counties.^{lxxxv}
- Poverty rates are concentrated around the Bootheel counties - southeast region of Missouri, the same region that continues to rank poorly with respect to health outcomes and health factors.
- The 2020 Missouri rate of homelessness was 11 per 10,000 (6,527 persons), which was less than the national rate of 17 per 10,000. The 2020 Point-in-Time Count indicates that between 2019 and 2020, individual homelessness in Missouri increased by 348 individuals or 5.3%.^{lxxxvi}
- Although unemployment numbers have decreased in recent months as many people return to work after COVID-19 related employment challenges, there are still some parts of the state that continue to see concerning levels of unemployment. Like the poverty rates, the areas of most concern are southern Missouri and St. Louis City.^{lxxxvii}

Total Poverty Rates Missouri, 2015-2019



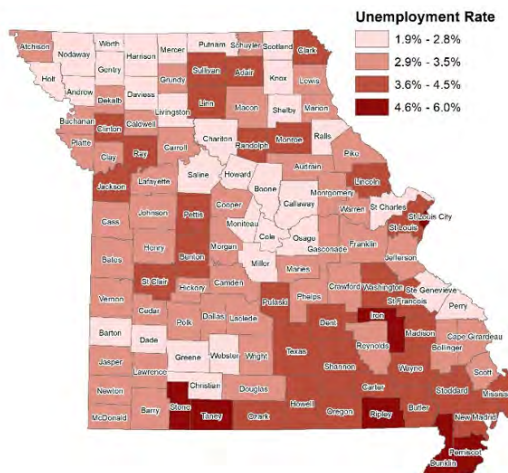
Under 18 Poverty Rates Missouri, 2015-2019



Source: United States Census Bureau. American Community Survey 5 Year Estimates. Table S1701.

United States Census Bureau. American Community Survey 5 Year Estimates. Table S1701.

Unemployment Rates Missouri, 2015-2019



Source: Missouri Department of Labor and Industrial Relations, August 2021 Unemployment Benefits by County

Forces of Change that May Impact the Missouri Health System's Ability to Respond to the Key Health Issue

COVID-19

- Difficulty in maintaining staff for many businesses may continue due to the effects of the COVID-19 pandemic.
- Long term effects of the COVID-19 pandemic on the economics of the state.
- Insurance access.
- The high cost of insurance has a ripple effect on the Missouri economy.

- The link between employment and insurance ties into the issues from COVID-19 pandemic and the loss of jobs.
- Less people working means less people covered by insurance.

Inequity & Cultural Division

- Intergenerational poverty related to racial inequity has affected many Missourians.
- Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue.
- Collaboration and regional knowledge sharing.
- Medicaid expansion.

Built Environment

The built environment includes the physical infrastructure of a community such as homes, buildings transportation systems, utilities and open spaces. The built environment affects health by impacting exposure to healthy food, physical activity, transportation, health care, pollutants and social interactions. Inadequate physical environments can contribute to unhealthy behaviors and exposure to toxins that lead to chronic diseases such as obesity, cardiovascular disease, diabetes and some types of cancer. These illnesses can lead to poor quality of life and premature death.

Key Facts^{xxxviii}

- 7.0% of low income Missourians do not live close to a grocery store which limits their ability to consume a healthy diet. Low access to grocery stores is even more pronounced in rural counties, such as Mercer County where up to 44.0% of the low-income population does not live close to a grocery store.
- 13.0% of Missourians lack adequate access to food. Poor food access can lead to poor nutritional intake, which reduces the resistance to some communicable diseases and increases the risk for development of chronic diseases.
- 77.0% of Missourians have adequate access to locations for physical activity as measured by their proximity to a park and/or recreation facility. Rural counties tend to have less access to physical activity. Scotland County has the lowest a rate with only 5.0% of the population having adequate access.
- Missouri ranks as the 17th most dangerous state for pedestrians as measured by the “Pedestrian Danger Index” (PDI), that calculates how deadly it is for people to walk in a state based on the number of people killed by drivers while walking, controlling for the number of people that live in that state and the share of people that walk to work.^{xc}
- Life expectancy can be influenced by where a person lives. In neighborhoods that lack a healthy environment the life expectancy of residents can be significantly lower than better resourced neighborhoods. For example, in suburban St. Louis the life expectancy of a resident of southeast Ferguson is 69 years compared to their neighbors near Old Jamestown who can expect to live until 81.^{xc}

Forces of Change that May Impact the Missouri Health System’s Ability to Respond to the Key Health Issue

COVID-19

- The pandemic has created an atmosphere of social isolationism which makes community building a more difficult proposition.

Economics

- The economic stability of communities is directly related to the built environment.
- Funding is integral in addressing the built environment.

Inequity & Cultural Division

- These divisions lead to a greater disparity in housing and the built environment.

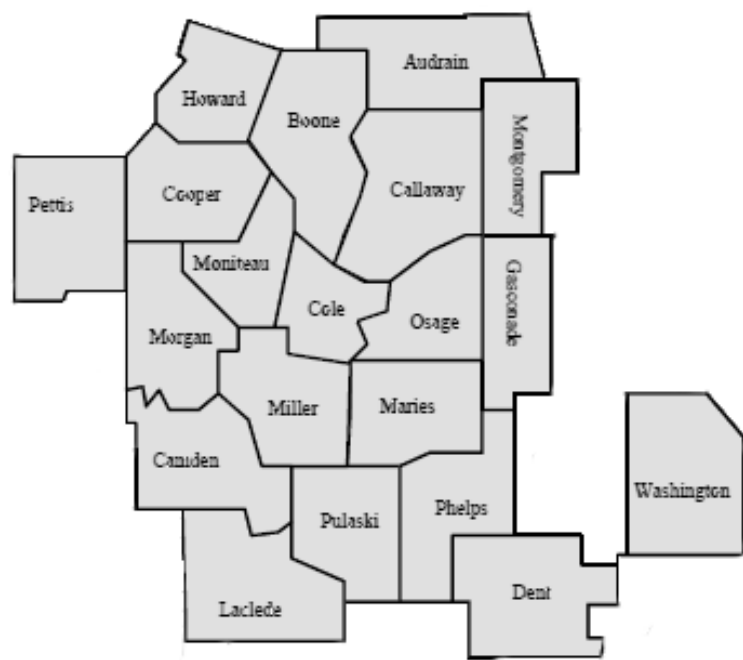
Missouri Health System Assets, or Opportunities that May Help Respond to the Key Health Issue

- Partnerships between state agencies and communities to address safe, accessible public parks and walking trails.
- Support of local communities focusing on sidewalk programs.
- DHSS has a five year CDC State Physical Activity and Nutrition (SPAN) Grant and the Prevention Research Center at Washington University in St. Louis, has a two year Building Resilient and Inclusive Communities (BRIC) Grant. Both grants are working in concert to improve the built environment.
- As part of both the SPAN and BRIC grants DHSS is working with Missourians for Responsible Transportation to assist both rural and urban communities with adopting complete streets ordinances and developing complete street plans.
- DHSS is also home to the Missouri Livable Streets Advisory Team. This statewide team consists of agencies and organizations that provide leadership, guidance and resources to advancing active transportation accessibility throughout the state.
- BRIC activities also focus on policy, system and environmental changes for reducing food insecurity and improving social connectedness in north St. Louis.

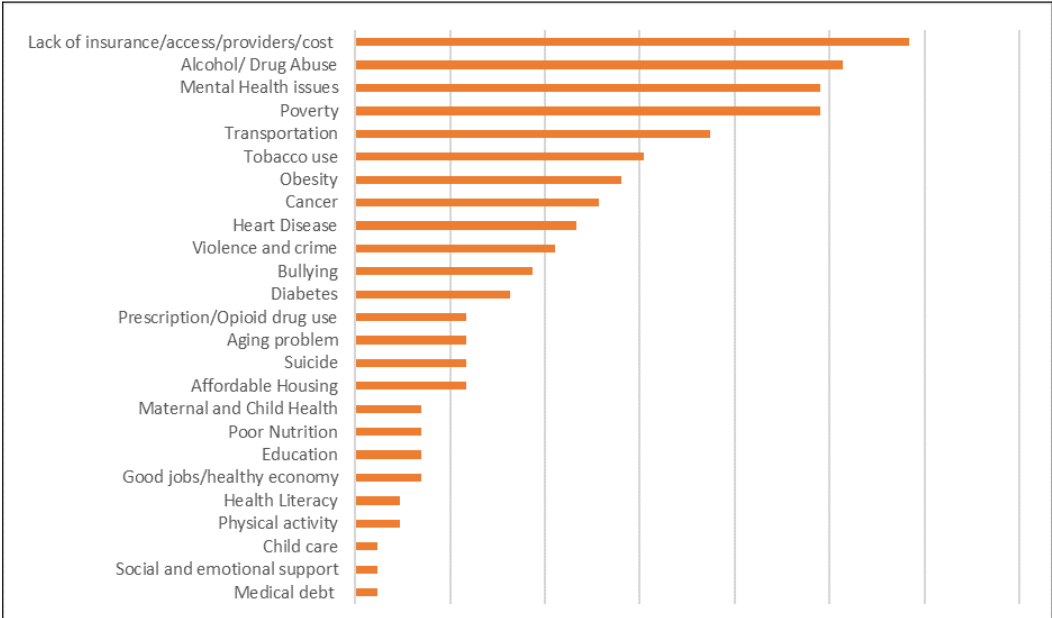
APPENDICES

Appendix A: State Health Data by Region

Central Region

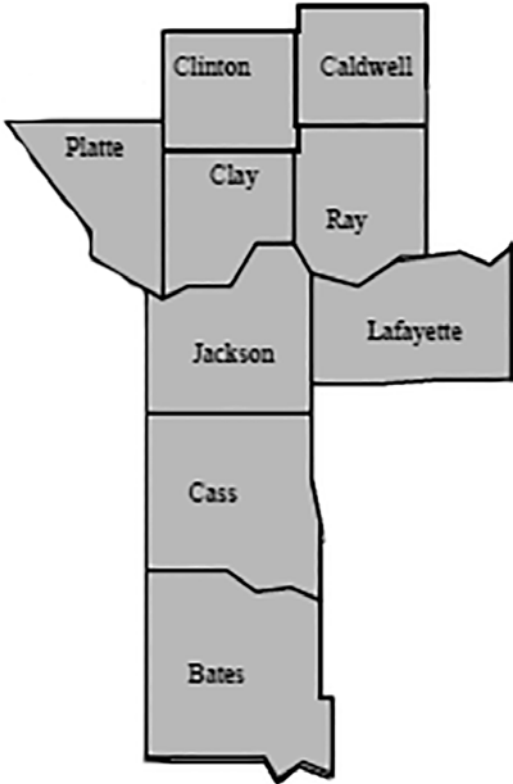


What are the general opinions regarding the health and quality of life in the region?

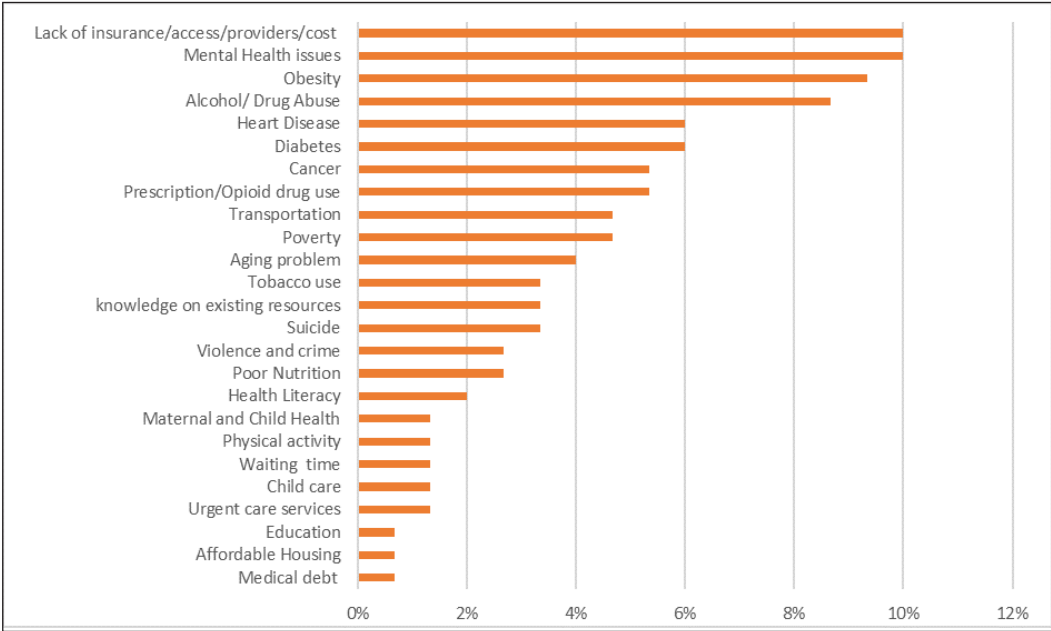


Appendix A: State Health Data by Region

Kansas City Metro Region

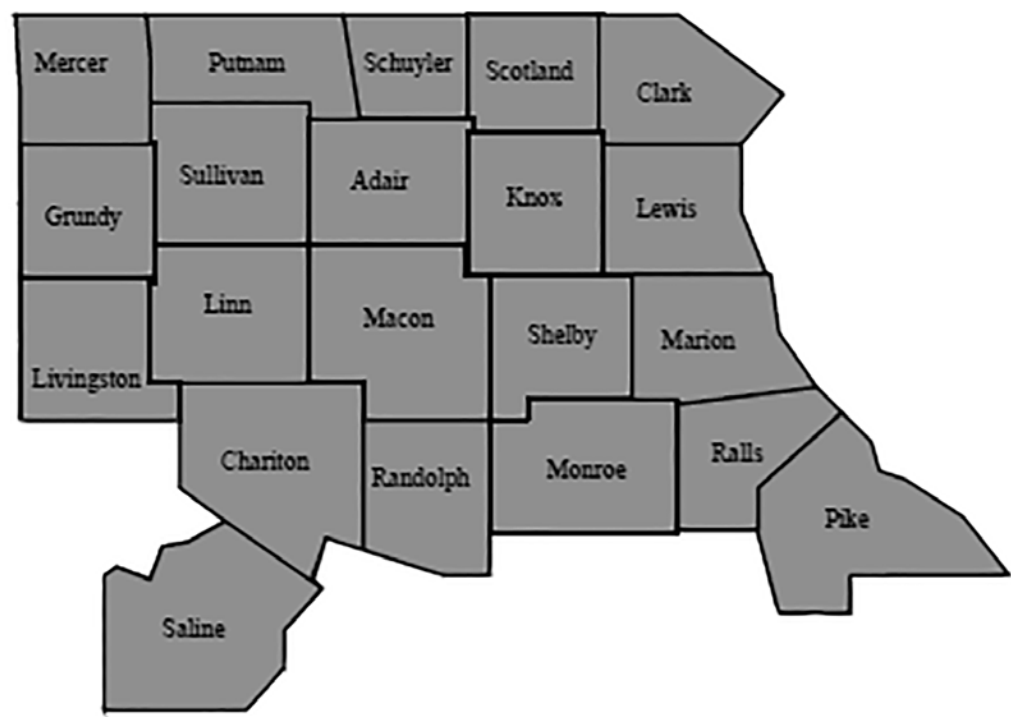


What are the general opinions regarding the health and quality of life in the region?

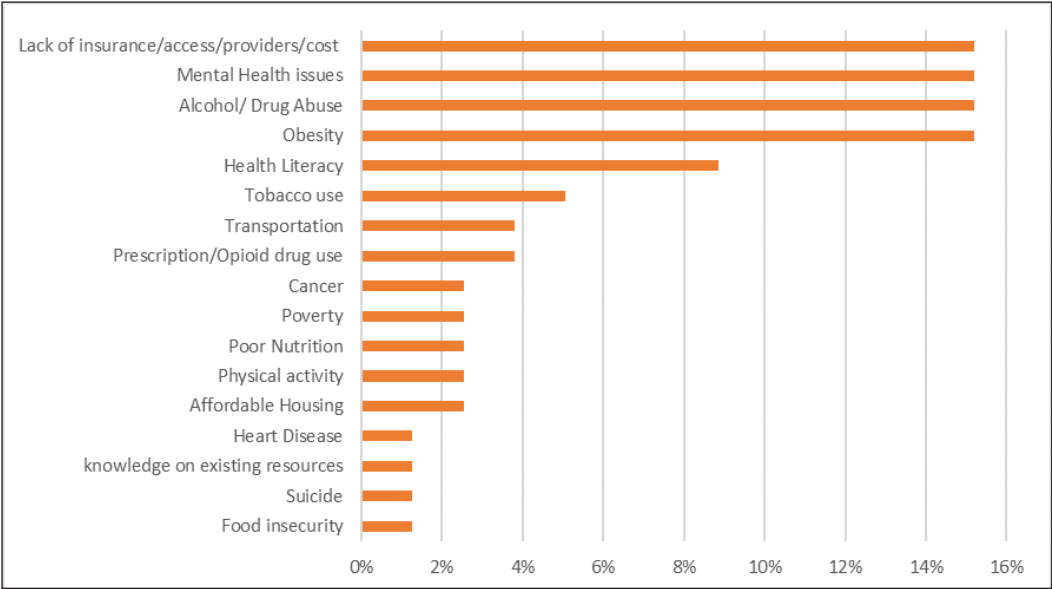


Appendix A: State Health Data by Region

Northeast Region

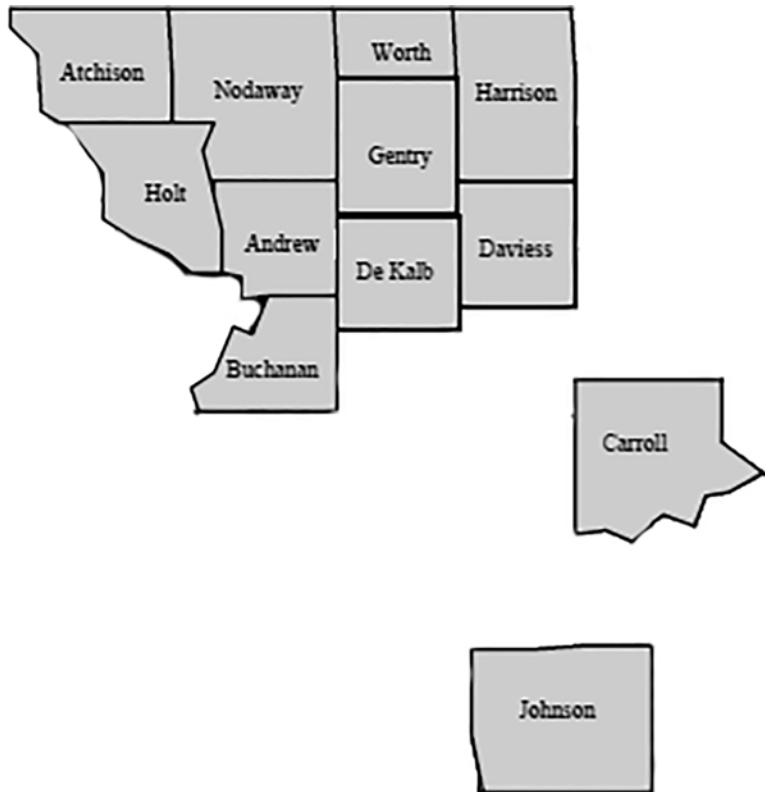


What are the general opinions regarding the health and quality of life in the region?

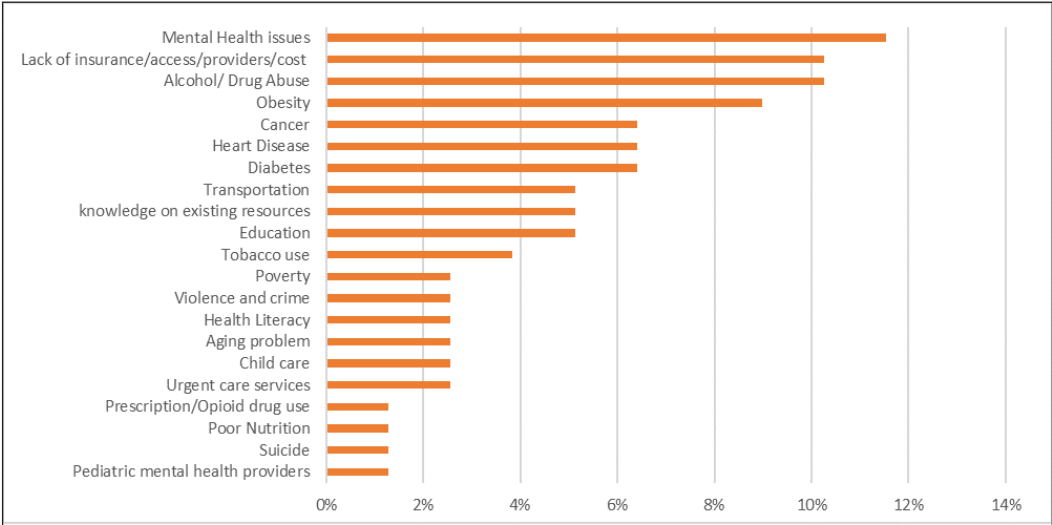


Appendix A: State Health Data by Region

Northwest Region

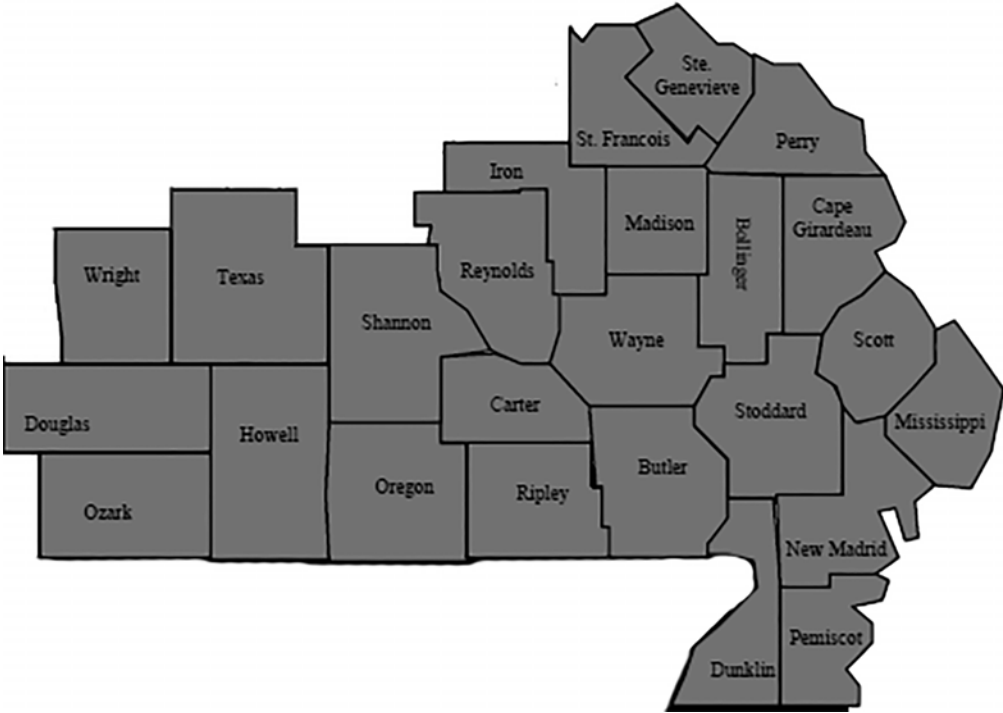


What are the general opinions regarding the health and quality of life in the region?

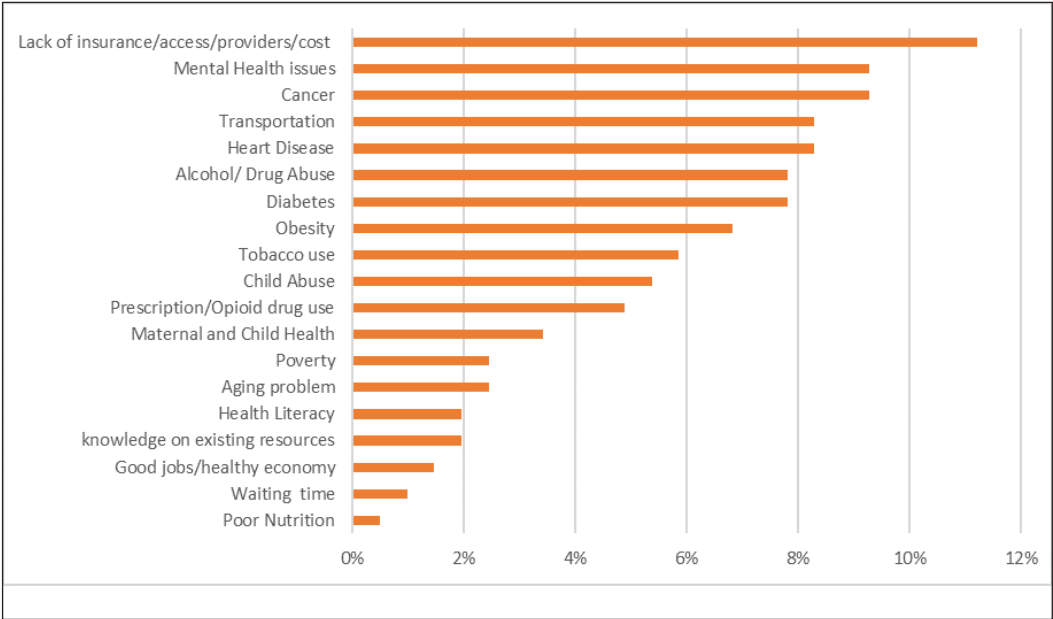


Appendix A: State Health Data by Region

Southest Region

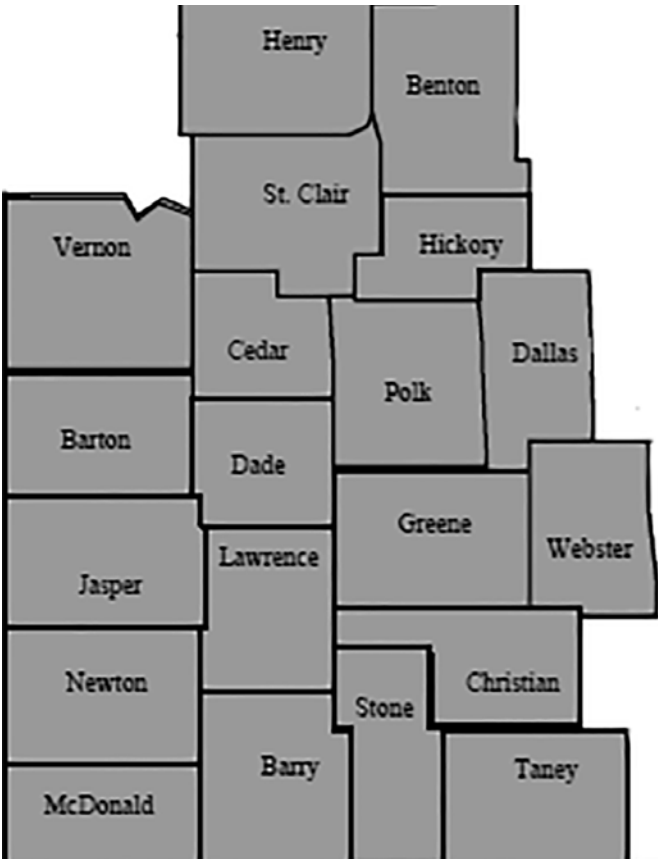


What are the general opinions regarding the health and quality of life in the region?

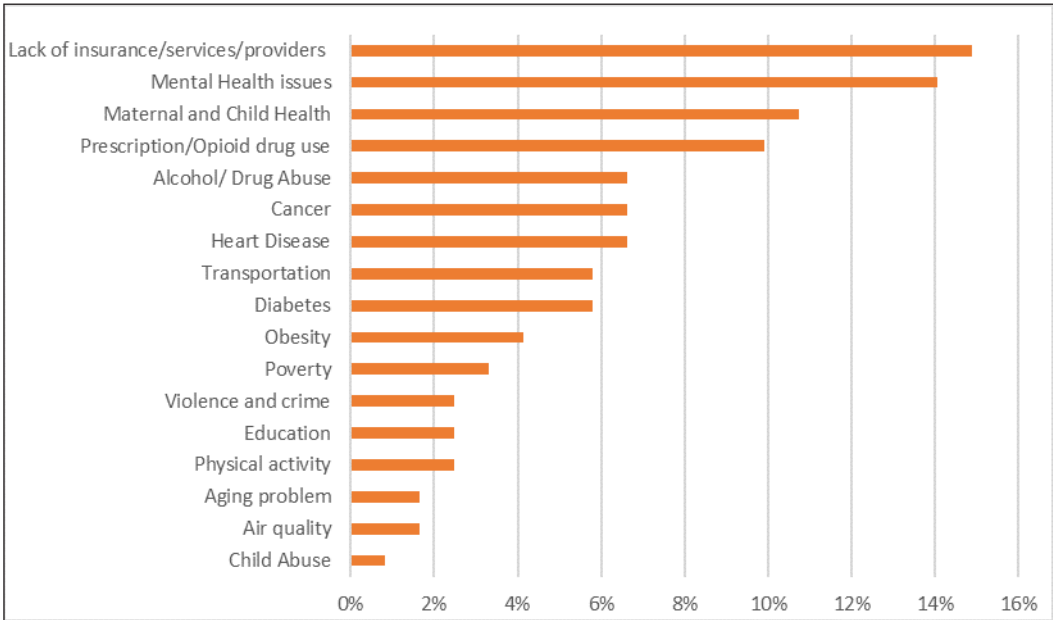


Appendix A: State Health Data by Region

Southwest Region

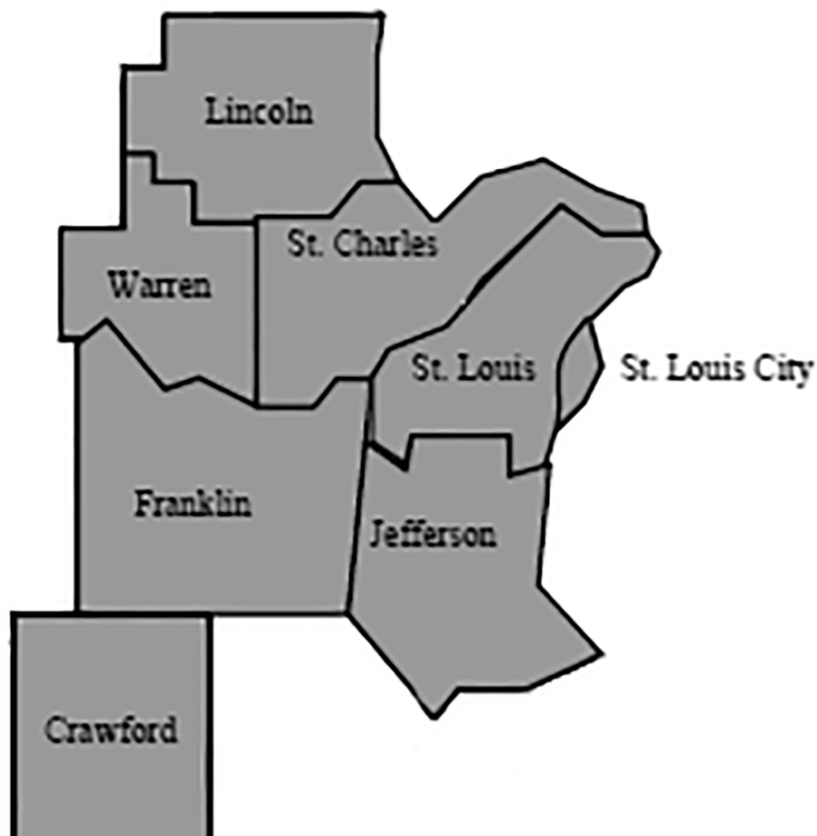


What are the general opinions regarding the health and quality of life in the region?

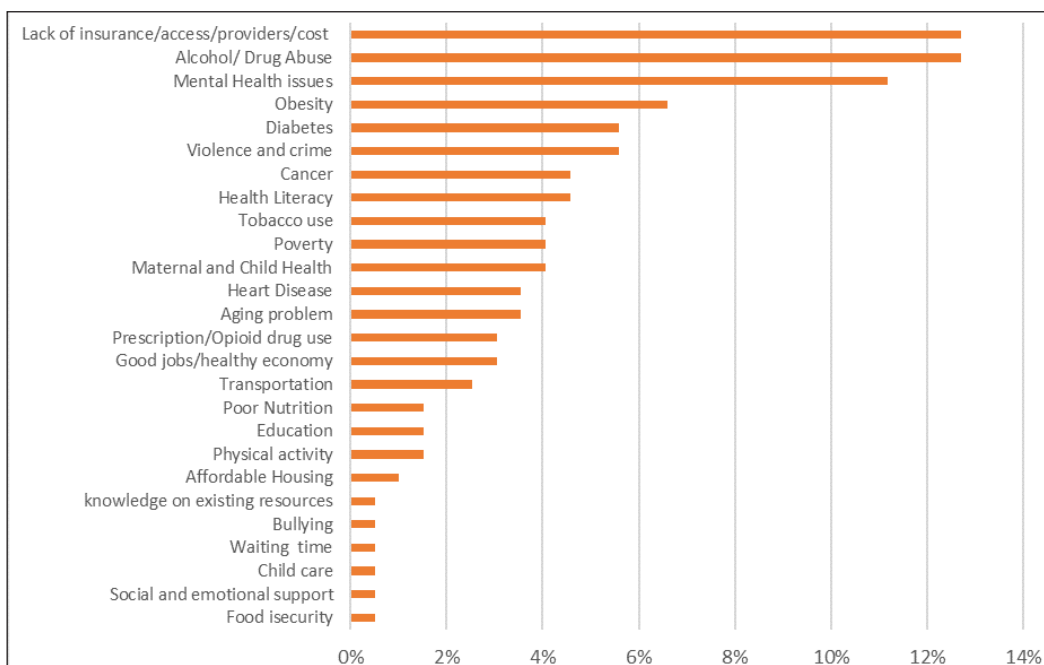


Appendix A: State Health Data by Region

St. Louis Metro



What are the general opinions regarding the health and quality of life in the region?



Missouri 2019 health factors and outcomes by county

| County | Health Outcomes | Health Factors | County | Health Outcomes | Health Factors | County | Health Outcomes | Health Factors | County | Health Outcomes | Health Factors | County | Health Outcomes | Health Factors |
|----------------|-----------------|----------------|-----------|-----------------|----------------|-------------|-----------------|----------------|------------|-----------------|----------------|----------------|-----------------|----------------|
| Adair | 71 | 36 | Clay | 5 | 5 | Iron | 108 | 96 | Montgomery | 82 | 64 | Schuyler | 37 | 85 |
| Andrew | 8 | 6 | Clinton | 20 | 22 | Jackson | 60 | 68 | Morgan | 77 | 91 | Scotland | 49 | 49 |
| Atchison | 24 | 9 | Cole | 14 | 12 | Jasper | 58 | 51 | New Madrid | 110 | 112 | Scott | 98 | 101 |
| Audrain | 50 | 58 | Cooper | 31 | 34 | Jefferson | 32 | 44 | Newton | 56 | 48 | Shannon | 74 | 109 |
| Barry | 86 | 65 | Crawford | 96 | 95 | Johnson | 17 | 35 | Nodaway | 19 | 23 | Shelby | 64 | 16 |
| Barton | 65 | 83 | Dade | 70 | 40 | Knox | 30 | 30 | Oregon | 105 | 102 | St. Charles | 1 | 1 |
| Bates | 48 | 60 | Dallas | 87 | 98 | Laclede | 84 | 89 | Osage | 3 | 3 | St. Clair | 67 | 97 |
| Benton | 90 | 86 | Daviess | 22 | 69 | Lafayette | 38 | 31 | Ozark | 100 | 103 | St. Francois | 78 | 87 |
| Bollinger | 76 | 81 | DeKalb | 7 | 63 | Lawrence | 89 | 46 | Pemiscot | 115 | 115 | St. Louis | 18 | 7 |
| Boone | 9 | 4 | Dent | 83 | 88 | Lewis | 63 | 50 | Perry | 11 | 21 | St. Louis City | 112 | 113 |
| Buchanan | 75 | 78 | Douglas | 66 | 92 | Lincoln | 39 | 62 | Pettis | 53 | 80 | Ste. Genevieve | 12 | 39 |
| Butler | 106 | 105 | Dunklin | 111 | 114 | Linn | 69 | 53 | Phelps | 81 | 29 | Stoddard | 91 | 94 |
| Caldwell | 27 | 57 | Franklin | 55 | 17 | Livingston | 52 | 18 | Pike | 54 | 77 | Stone | 68 | 59 |
| Callaway | 29 | 42 | Gasconade | 35 | 27 | McDonald | 104 | 106 | Platte | 2 | 2 | Sullivan | 34 | 73 |
| Camden | 42 | 43 | Gentry | 13 | 10 | Macon | 46 | 28 | Polk | 36 | 41 | Taney | 80 | 75 |
| Cape Girardeau | 41 | 15 | Greene | 61 | 32 | Madison | 102 | 70 | Pulaski | 23 | 38 | Texas | 88 | 99 |
| Carroll | 26 | 55 | Grundy | 94 | 52 | Maries | 57 | 72 | Putnam | 92 | 47 | Vernon | 93 | 66 |
| Carter | 99 | 104 | Harrison | 44 | 61 | Marion | 51 | 45 | Ralls | 21 | 19 | Warren | 33 | 20 |
| Cass | 10 | 14 | Henry | 95 | 54 | Mercer | 47 | 24 | Randolph | 79 | 84 | Washington | 107 | 107 |
| Cedar | 85 | 76 | Hickory | 109 | 79 | Miller | 59 | 67 | Ray | 40 | 71 | Wayne | 103 | 108 |
| Chariton | 28 | 25 | Holt | 15 | 13 | Mississippi | 113 | 110 | Reynolds | 101 | 93 | Webster | 43 | 74 |
| Christian | 4 | 8 | Howard | 62 | 37 | Moniteau | 6 | 26 | Ripley | 114 | 111 | Worth | 72 | 11 |
| Clark | 16 | 82 | Howell | 73 | 90 | Monroe | 25 | 33 | Saline | 45 | 56 | Wright | 97 | 100 |

Summary of Missouri Improvement Plan (2013-2018)

| Performance Measure | Baseline and Year | Target and Year | Actual Measure (2016 plan year) |
|--|--------------------------|------------------------|--|
| IMPROVEMENTS | | | |
| No health care coverage (BRFSS) | 17.5% (2011) | 10.0% (2018) | 12.1% (2015) |
| Needed to see a doctor in the past 12 months but could not because of cost (BRFSS) | 15.7% (2011) | 12.7% (2018) | 13.8% (2015) |
| Number of primary care physicians | 4,576 (2013) | 4,900 (2018) | 4,801 |
| Hospital admissions for uncontrolled diabetes without complications per 100,000 population, adults, HCUP data | 23.7 (2009) | 4.55 (2009) | 20.5 (2013) |
| Avoidable admissions for hypertension per 100,000 population, adults | 68.4 (2009) | 16.1 (2009) | 64.5 (2013) |
| Prevalence of obesity among adults (BRFSS) | 30.2% (2011) | 27.2% (2018) | 32.4% (2015) |
| Prevalence of obesity among high school students (YRBS) | 15.4% (2011) | 12.4% (2018) | 13.1% (2015) |
| Current smoking among adults (BRFSS) | 25.0% (2011) | 19.7% (2019) | 22.3% (2015) |
| Current smoking among high school students (YRBS) | 18.1% (2011) | 8.0% (2019) | 11.0% (2015) |
| Percent of Missouri population that live in communities with smoking bans covering all indoor public places and indoor work places (CTCP program data) | 23.0% (2013) | 33.0% (2018) | 31.0% (2016) |

Continued

| Performance Measure | Baseline and Year | Target and Year | Actual Measure (2016 plan year) |
|---|------------------------|-----------------|---------------------------------|
| Reduce alcohol and drug use among youth | 24.7% (2008 – 2010) | 23% (2018) | 21.8% (2013 – 2014) |
| <ul style="list-style-type: none"> Alcohol use in past month age 12 to 20 (NSDUH*) Marijuana use among high school students in past 30 days (YRBS) – no 2011 data available | 20.6% (2009) | 19.6% (2018) | 16.3% (2015) |
| Public Health Accreditation Board (PHAB) accredited | 1 (2014) | 27 (2018) | 5 (2016) |
| Missouri Institute for Community Health (MICH) Accredited | 12 (2014) | 27 (2018) | 15 (2016) |
| CHALLENGES | | | |
| Think of one person as your personal doctor or health care provider | 74.6% (2011) | 80% (2018) | 67.4% (2015) |
| Number of dentists | 2,435 (2013) | 2,239 (2018) | 2,245 |
| Hospital admissions for short-term complications of diabetes per 100,000 population, adults | 70 (2009) | 38.5 (2009) | 94.4 (2013) |
| Reduce alcohol and drug use among general population | (2008-2010) | (2008-2010) | (2008-2010) |
| <ul style="list-style-type: none"> Marijuana use in past month Illicit drug use other than marijuana in past month. | 6.06% 2.89% | 5.5% 2.66% | 7.98% 2.91% |
| Reduce alcohol and drug use among pregnant women: Drinkers who quit during pregnancy | 52.7% (2010) | 58% (2018) | 49.1% (2013) |

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